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## TO MY WIFE

GENEVA ROBERTSON FISCHER

In grateful recognition of her patience during the period I was "married" to the preparation of the manuscript and for her conscientious help in the arduous task of proofreading and preparation of the index.



## PREFACE

This book is a guide and quick introduction to the literature on the biology and control of some 330 species of smut fungi and the diseases they cause. It represents the essential information on the subject matter contained in more than 3,000 scientific papers, bulletins, and books. The author's expectation is that his compilation will be valuable to those engaged in teaching, research, and extension work in plant pathology, mycology, agronomy, and botany.

The purpose in preparing the book is to make quickly available what is known concerning any particular smut fungus. In embarking on a research problem, the necessity of thoroughly reviewing the literature concerning what has already been published on the subject—and on related subjects—is often discouraging. Our accumulated knowledge in the field of mycology and plant pathology is scattered through literally hundreds of series of journals, periodicals, proceedings, archives, reports, bulletins, books, etc., representing many thousands of volumes and in some cases dating back more than a hundred years. The problem is how to get in touch with the literature without spending a disproportionate amount of time at the task even with the aid of such abstracting journals as the *Review of Applied Mycology*. The answer appears to lie in extensive and exhaustive bibliographic reviews. The present work is not offered as a model or example, but the author does hope that it will give subject-matter specialists in other phases of mycology and plant pathology some encouragement or inspiration to prepare similar reviews of their own fields.

The subject-matter guide subdivides, under each smut species, the published information pertinent to that species. The intent of this arrangement is to enable one to determine at a glance, at least in a general way, what has been published regarding the control, and the several phases of the biology of each species. Using the term "biology" in a broad sense, the several phases are: Culture on Artificial Media; Cytology; Heterothallism and Sex; Hybridization and Genetics; Life History, Parasitism and Factors Affecting; Longevity of Spores; Miscellaneous Records; Physiologic Specialization; Spore Germination and Factors Affecting; and Varietal Resistance and Susceptibility. It will be noticed that the references are arranged chronologically under each heading. This is done to indicate quickly the year of the first contribution as well as the author, for historical interest at least.

Naturally, the material bears witness to the fact that the smuts of our economic crops, particularly the cereals, have been the most thoroughly investigated. Most of the other species, by comparison, have been sadly neglected and indicate a fertile field for those interested in research in the biology of the smut fungi.

It is only theoretically possible for a review of this kind to be absolutely complete. The aim has been to achieve the greatest possible degree of practical completeness, except for such species as *Tilletia caries* and *Tilletia foetida*, where there have been many hundreds of publications of a popular nature which often duplicate for purely local use information published elsewhere. Also, many hundreds of references purposely have been omitted which are merely small lists or "contributions to the flora," etc. Such publications do contribute to our knowledge of geographic distribution of the smut fungi, but since the sum of their contributions is contained in Zundel's *The Ustilaginales of the World*, a purely taxonomic treatise in which the geographic distribution of each species is given, there would be little justification for duplicating such information here.

It cannot be claimed, either, that each reference in the bibliography is fairly and completely classified in the subject-matter guide. In some instances where the author has not been able to inspect the original article and therefore has had to rely on someone else's review of it, the available information may have been incomplete, resulting in incomplete classification of the subject-matter content. Perhaps it should go without saying that a complete review of the literature on the biology and control of any one smut species should include all the references indicated for that species, irrespective of subject-matter classification. Some hundreds of species are not represented in this book. Concerning them there is either no published information about their biology and control or such information was not discovered during the author's preparation of this work. He would be grateful for having his attention called to any instance where he has not done justice to the subject-matter breakdown, relative to any reference; to reference material which has somehow been overlooked; and to textual misrepresentations and errors, of which more than a few have probably escaped detection. Such contributions and corrections will be acknowledged, accumulated, and later incorporated in a revised edition, perhaps ten years hence.

The author is indebted to many individuals and organizations for various kinds of aid given in the preparation of this book. George L. Zundel kindly gave permission to use a copy of his manuscript, *The Ustilaginales of the World*, as a guide to nomenclature, thus obviating the necessity of waiting for his contribution to appear in print. In general, the nomenclature and synonymy in the present work are

taken or adapted from Zundel's monograph. In order to make the present work as useful as possible, the author has also followed Dr. Zundel's disposition of species, even though Dr. Zundel's treatment of many species is not in agreement with the species concept held by the author. He is grateful to C. S. Holton, H. A. Rodenhiser, R. Sprague, C. G. Shaw and other colleagues for suggestions regarding organization and treatment, and to the staff of the United States Department of Agriculture Library, Washington, D. C., for their courteous and helpful attention during a period of intensive review of literature which was not elsewhere available. Likewise, the helpful suggestions of John A. Stevenson, who made available the facilities of his personal library and that of the Division of Mycology and Disease Survey, United States Bureau of Plant Industry, Beltsville, Maryland, have left me in his debt. The sympathetic attitude of the Division of Forage Crops and Diseases, Bureau of Plant Industry, Soils and Agricultural Engineering, United States Department of Agriculture, during the time the author was in their employ, is specifically acknowledged. He gratefully acknowledges, also, that this work was supported in part by the State College of Washington Research Fund. Finally, the author wishes to pay tribute to the invaluable assistance of several typists during the years this work has been in preparation, especially to the conscientious and highly competent efforts of the trio who suffered through the endless maze of foreign citations and technical terminology during the final preparation of the manuscript: Mrs. Roberta M. Law, Mrs. Donna I. Neumayer, and Mrs. Ava Butler.

GEORGE W. FISCHER

Pullman, Washington  
December, 1950





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## SUBJECT MATTER GUIDE TO THE LITERATURE

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2971 Thirumalachar 1947 \*

### LIFE HISTORY, PARASITISM AND FACTORS AFFECTING

2971 Thirumalachar 1947

### SPORE GERMINATION AND FACTORS AFFECTING

2971 Thirumalachar 1947

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### MISCELLANEOUS

Host range 1724 Liro 1938

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1724 Liro 1938

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Host range and morphology 1724 Liro 1938

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1724 Liro 1938

**MISCELLANEOUS**

Host range 1724 Liro 1938

Considered to be synonym of *C. arenaria* Sydow 1213 Hirschhorn 1947

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2416 Rawitscher 1922

### HETEROTHALLISM AND SEX

2416 Rawitscher 1922 (copulation between promycelial cells)

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**DOASSANSIA OCCULTA** (Hoffm.) Cornu Farlow in Trans. Ottawa Field Nat. Club 2: 129. 1884.

*Sclerotium occultum* Hoffm., Icon. Anal. Fung. 67. 1863. (Tab. 6, fig. 1-9).

*Doassansiopsis occulta* Dietel, Eng. and Prantl, Nat. Pflanz. 1 (1): 21. 1897.

## LIFE HISTORY, PARASITISM AND FACTORS AFFECTING

2730 Setchell 1892

2655 Schellenberg 1911

## MISCELLANEOUS

Morphology and symptoms 2730 Setchell 1892

Morphology and symptoms 2655 Schellenberg 1911

Host range and morphology 1724 Liro 1938

## SPORE GERMINATION AND FACTORS AFFECTING

2730 Setchell 1892

2655 Schellenberg 1911

**DOASSANSIA OPACA** Setchell Amer. Acad. Arts. Sci. Proc. 26: 15. 1891.

## LIFE HISTORY, PARASITISM AND FACTORS AFFECTING

2730 Setchell 1892

## MISCELLANEOUS

Morphology and symptoms 2730 Setchell 1892

## SPORE GERMINATION

2730 Setchell 1892

**DOASSANSIA PUNCTIFORMIS** (Niessl) Schröt. Krypt. Fl. Schles. 3 (1): 287. 1887. (not Winter, 1886).

*Protomyces punctiformis* Niessl, Verh. Nat. Ver. Brün. 10: 166. 1872.

*Doassansia niesslii* DeToni, Jour. Mycol. 4: 17. 1888.

*Setchellia punctiformis* Magnus, Verh. Bot. Ver. Prov. Brandenb. 37: 93. 1895.

## LIFE HISTORY, PARASITISM AND FACTORS AFFECTING

315 Brefeld 1895

1825 Magnus 1895

1724 Liro 1938

## MISCELLANEOUS

Morphology and symptoms 315 Brefeld 1895

1825 Magnus 1895

Morphology 1724 Liro 1938

## SPORE GERMINATION AND FACTORS AFFECTING

315 Brefeld 1895

1825 Magnus 1895

**DOASSANSIA SAGITTARIAE** (Westend.) Fisch. Ber. Deutschen Bot. Ges. 2: 405. 1884.*Uredo sagittariae* Westend., Herb. Crypt. Belge 1177. 1857.*Physoderma sagittariae* Fuck., Fungi Rhen. 1549. 1865.*Protomyces sagittariae* Fuck., Sumb. Mycol. 75. 1869.*Protomyces bizzozzerianum* Sacc., Mycol. Ven. 889. 1876.*Entyloma bizzozzerianum* Sacc., Michelia 2: 135. 1880.

## CYTOLOGY

2416 Rawitscher 1922

2732 Seyfert 1927

## HETEROTHALLISM AND SEX

770 Fisch 1884 (sporidial fusions)

2416 Rawitscher 1922 (denies fusions)

## LIFE HISTORY, PARASITISM AND FACTORS AFFECTING

770 Fisch 1884

2730 Setchell 1892

315 Brefeld 1895

1148 Hennings 1903

2416 Rawitscher 1922

2732 Seyfert 1927

## MISCELLANEOUS

Symptoms and morphology 315 Brefeld 1895

Symptoms and morphology 2655 Schellenberg 1911

Formation of clamp connections on the mycelium 2732 Seyfert 1927

Host range and morphology 1724 Liro 1938

## PHYSIOLOGIC SPECIALIZATION

598 Davis 1903

## SPORE GERMINATION AND FACTORS AFFECTING

770 Fisch 1884

340 Briard 1886

3039 Trelease 1886

2730 Setchell 1892

315 Brefeld 1895

2655 Schellenberg 1911

2416 Rawitscher 1922 (including cytology of)

2732 Seyfert 1927

**DOASSANSIOPSIS NYMPHAEAE** (Sydow) Thirum. Mycologia 39: 604. 1947.*Doassansia nymphaeae* Sydow, Ann. Mycol. 10: 405. 1912.

## MISCELLANEOUS

Symptoms and morphology 2971 Thirumalachar 1947

**ENTORRHIZA ASCHERSONIANA** (P. Magnus) Lagerh. Hedwigia 27. 262. Aug. 1888. (DeToni in Sacc. Syll. Fung. 7 (2): 497. 28 Oct. 1888.)

*Schinzia cypericola* Magnus, Verh. Bot. Prov. Brandenb. 20: 54. 1878. p.p.

*Entorrhiza cypericola* C. Weber, Bot. Ztg. 42: 378. 1884.

*Schinzia aschersoniana* P. Magnus. Ber. Deutschen Bot. Ges. 6: 103. 1888.

*Entorrhiza junci* Bref., Unters. Gesammt. Myk. 15: 80. 1912.

LIFE HISTORY, PARASITISM AND FACTORS AFFECTING  
3185 Weber 1884

MISCELLANEOUS

Morphology and symptoms 2655 Schellenberg 1911

Morphology 1724 Liro 1938

SPORE GERMINATION AND FACTORS AFFECTING

3185 Weber 1884

2710 Schwarz 1910

2655 Schellenberg 1911

321 Brefeld 1912

**ENTORRHIZA CYPERICOLA** (P. Magnus) DeToni Sacc. Syll. Fung. 7 (2): 498. 1888. Not Weber.

*Schinzia cypericola* P. Magnus, Verh. Bot. Ver. Brandenb. 20: 53. 1878.

MISCELLANEOUS

Generic positions 1813 Magnus 1879

Morphology and symptoms 1816 Magnus 1888

Morphology and symptoms 2655 Schellenberg 1911

LIFE HISTORY, PARASITISM AND FACTORS AFFECTING

1821 Magnus 1893

**ENTORRHIZA DIGITATA** Lagerh. Hedwigia 27: 263. 1888.

*Entorrhiza cypericola* Trail, Scot. Nat. N. S. 1: 241-243. 1884.

*Schinzia digitata* Magnus, Jahresb. Naturf. Ges. Graubündens N.F. 34: 7. 1890.

*Schinzia cypericola* Swanton, Brit. Plant Galls, p. 141. 1912.

*Entorrhiza aschersoniana* Lind, Danish Fungi, p. 271. 1913.

LIFE HISTORY, PARASITISM AND FACTORS AFFECTING

2710 Schwarz 1910

760 Ferdinandsen and Winge 1914

MISCELLANEOUS

Morphology and symptoms 1605 Lagerheim 1888

Morphology 2655 Schellenberg 1911

Morphology 1724 Liro 1938

**ENTORRHIZA ISOËTES** (Rostr.) Liro Lunnon Ystava 38: 110. 1934.

*Ustilago isoëtes* Rostr., Bot. Tidsskr. 26: 306, 316. 1905.

MISCELLANEOUS

Morphology and symptoms 1724 Liro 1938

**ENTORRHIZA RAUNKIAERIANA** Ferd. and Winge Dansk. Bot. Archiv. 2: 8. 1914.

MISCELLANEOUS

Morphology 1724 Liro 1938

**ENTORRHIZA SCIRPICOLA** (Correns) Sacc. and H. and P. Sydow. Sacc. Syll. Fung. 14: 425. 1900.

*Schinzia scirpicola* Correns, Hedwigia 36: 40. 1897.

MISCELLANEOUS

Morphology and symptoms 2655 Schellenberg 1911

Morphology 1724 Liro 1938

**ENTYLOMA ANTENNARIAE** Liro Ann. Acad. Sci. Fenn. A, 42: 131. 1938.

MISCELLANEOUS

Morphology and relationship to other *Entyloma* spp. on Compositae 1724 Liro 1938

SPORE GERMINATION AND FACTORS AFFECTING

1716 Liro 1904

**ENTYLOMA ARNICALE** Ell. and Ev. (N. A. Fungi 3136; hyponym. 1894); Bull. Torr. Bot. Club 22: 57. 1895.

*Ramularia arnicalis* Ell. and Ev., Proc. Acad. Nat. Sci. Philadelphia, 1891: 85.

*Entyloma calendulae* Fragoso, Bol. R. Soc. Esp. Hist. Nat. 24: 122. 1904. p.p.

*Entyloma arnicae* H. and P. Sydow (nom. nud.), Ann. Mycol. 16: 244. 1918.

MISCELLANEOUS

Incidence in North America and relationship to other species on Compositae 2627 Savile 1947

**ENTYLOMA ARNOSERIDIS** H. and P. Sydow Ann. Mycol. 16: 244. 1918 (nom. nud.).

CULTURE ON ARTIFICIAL MEDIA

1424 Kaiser 1936

**ENTYLOMA ASCHERSONII** (Ule) Woronin Abh. Senckenberg Naturf. Ges. 12: 580. 1882.

*Sorosporium aschersonii* Ule, Hedwigia 17: 18. 1878.

*Ustilago magnusii* Wint., Rabenh. Krypt. Fl. 1: 87. 1881. p.p.

LIFE HISTORY, PARASITISM AND FACTORS AFFECTING

3266 Woronin 1882

SPORE GERMINATION AND FACTORS AFFECTING

3266 Woronin 1882

**ENTYLOMA AUSTRALE** Speg. Anal. Soc. Cien. Argent. 10: 5. JI. 1880.

*Protomyces physalidis* Kalchb. and Cooke, Grevillea 10: 22. 1880.

*Entyloma besseyi* Farl., Bot. Gaz. 8: 275. 1883.

*Entyloma physalidis* Wint., Hedwigia 22: 130. 1883.



LIFE HISTORY, PARASITISM AND FACTORS AFFECTING  
1047 Hanna 1938

MISCELLANEOUS

Two distinct types of conidia 1047 Hanna 1938

**ENTYLOMA BELLIDIASTRI** Maire Österr. Bot. Zeitschr. 57: 274.  
1907.

MISCELLANEOUS

Morphology and symptoms 2655 Schellenberg 1911

**ENTYLOMA BELLIDIS** Krieger Hedwigia 35: 145. 1896.

MISCELLANEOUS

Symptoms and morphology 2655 Schellenberg 1911

**ENTYLOMA BORAGINIS** Cif. Bull. Soc. Bot. Ital. 1924: 52. 1924.

*Entyloma serotinum* Schröt., in Beitr. Biol. Pflanz. (Cohn) 2: 437. 1877. p.p.

*Entyloma canescens* Schröt., Maire in Bull. Soc. Bot. France 48: 208. 1903.

MISCELLANEOUS

Considered as *E. fergusonii* phys. f. *boraginis* 1424 Kaiser 1936

**ENTYLOMA CALENDULAE** (Oud.) DeBary Bot. Ztg. 32: 105.  
1874.

*Protomyces calendulae* Oud., Arch. Neerl. 8: 384. 1873.

CULTURE ON ARTIFICIAL MEDIA

2838 Stempell 1935

CYTOLOGY

2231 Paravicini 1917

2838 Stempell 1935

1424 Kaiser 1936

HETEROTHALLISM AND SEX

2231 Paravicini 1917 (sporidial fusions)

1424 Kaiser 1936

LIFE HISTORY, PARASITISM AND FACTORS AFFECTING

617 DeBary 1874

2838 Stempell 1935

1424 Kaiser 1936

MISCELLANEOUS

Morphology and symptoms 2655 Schellenberg 1911

Segregation into eight species on basis of host specialization as observed in field 2901 Sydow 1918

Description of disease and organism on dahlia 817 Flachs 1927

Formation of clamp connections on the mycelium 2732 Seyfert  
1927

Incidence and symptoms in Germany 1898 Mehlisch 1935

Chlamydospores in culture 2838 Stempell 1935

Host range, morphology, and relation to similar species 1724  
Liro 1938

SPORE GERMINATION AND FACTORS AFFECTING

617 DeBary 1874

619 DeBary 1887

1843 Maire and Marguery 1898

2625 Schellenberg 1911

2231 Paravicini 1917

2416 Rawitscher 1922

2838 Stempell 1935

1424 Kaiser 1936

**ENTYLOMA CHRYSOSPENII** (Berk. and Br.) Schröt. In Cohn  
Beitr. z. Biol. d. Pflanz. 2: 372, 439. 1877.

*Protomyces chrysosplenii* Berk. and Br., Ann. Mag. Nat. Hist. VI, 15: 36.  
1875.

#### MISCELLANEOUS

Morphology and symptoms 2655 Schellenberg 1911

Clamp connections on the mycelium 2732 Seyfert 1927

#### SPORE GERMINATION AND FACTORS AFFECTING

1839 Maire 1900

**ENTYLOMA COLLINSIAE** Harn. Bull. Calif. Acad. Sci. 1: 40.  
1884.

#### MISCELLANEOUS

Incidence in Oregon on *Collinsia* 1338 Jackson 1920

**ENTYLOMA COMPOSITARUM** Farl. Bot. Gaz. 8: 275. 1883.

*Entyloma erigerontes* Sydow, Ann. Mycol. 16: 244. 1918.

*Entyloma madaiae* Cif., Atti R. Ist. Bot. Pavia III, 1: 88. 1924. (On *Madia glomerata* Hook.).

*Entyloma incertum* Cif., Ann. Mycol. 26: 38. 1928. (On *Bidens chrysanthemoides* Michx.).

*Entyloma eupatorii* Cif., Ann. Mycol. 26: 38. 1928. (On *Eupatorium urticaefolium* Reichard).

*Entyloma wisconsinense* Cif., Ann. Mycol. 26: 40. 1928. (On *Senecio aureus* L.).

*Entyloma helenii* Cif., Ann. Mycol. 26: 40. 1928. (On *Helenium autumnale* L.).

*Entyloma lepochydis* Cif., Ann. Mycol. 26: 41. 1928. (On *Lepochys pinnata* (Vent.) T. and F.).

*Entyloma davisii* Cif., Ann. Mycol. 26: 43. 1928. (On *Rudbeckia hieta* L.).

*Entyloma anceps*, Cif., Ann. Mycol. 26: 44. 1928. (On *Rudbeckia lacinata* L.).

*Entyloma boltoniae* Cif., Ann. Mycol. 26: 47. 1928. (On *Boltonia asteroides* (L.) L'Her.).

#### MISCELLANEOUS

Emended description and comparison with other species on Compositae 2627 Savile 1947

Association of *Stagonospora* sp. with on *Ambrosia* 2627 Savile 1947

**ENTYLOMA CORYDALIS** DeBary Bot. Ztg. 32: 104. 1874.

#### MISCELLANEOUS

Morphology and symptoms 2655 Schellenberg 1911

Host range and morphology 1724 Liro 1938

SPORE GERMINATION AND FACTORS AFFECTING  
617 DeBary 1874

**ENTYLOMA CORYDALIS-LUTEAE** Voglino Bull. Soc. Bot. Ital.  
1896: 36.

MISCELLANEOUS

Morphology 2625 Schellenberg 1911

SPORE GERMINATION AND FACTORS AFFECTING  
2625 Schellenberg 1911

**ENTYLOMA CRASTOPHILUM** Sacc. Michelia 1: 540. 1879.

*Thecaphora dactylidis* Pass., in Fisch. v. Waldh., Apercu, 34. 1877.

MISCELLANEOUS

Morphology and symptoms 2655 Schellenberg 1911

Host range 1724 Liro 1938

**ENTYLOMA DAHLIAE** H. and P. Sydow. Ann. Mycol. 10: 36.  
1912.

*Entyloma dahliae* Unamuno, in herb.; Fragoso, in Bot. R. Soc. Espan. Hist.  
Nat. 24: 123. 1924.

*Entyloma unamunoi* Cif., Atti R. Ist. Univ. Pavia, n.s. 1: 101. 1924.

*Entyloma calendulae* (Oud.) DeBary forma *dahliae* Viegas, Bragantia 4: 748.  
1944.

CONTROL

984 Green 1932

2532 Roekens 1946

3128 Viennot-Bourgin 1947

LIFE HISTORY, PARASITISM AND FACTORS AFFECTING

2228 Pape 1926

984 Green 1932

3128 Viennot-Bourgin 1947

MISCELLANEOUS

Considered a form (f. sp. *dahliae*) of *E. calendulae* 2840 Sternon  
1918

Incidence near Paris 82 Arnaud and Arnaud 1925

Incidence and description of disease in Germany 2228 Pape 1926

Description of disease 984 Green 1932

Incidence in Sumatra and Guatemala 2207 Palm 1932

Incidence and symptoms in Germany 1898 Mehlisch 1935

Longevity of spores; at least 10 years 779 Fischer 1936

First report from Palestine and Mediterranean region 2419 Rayss  
and Zwirn 1946

Severity in Belgium 2532 Roekens 1946

SPORE GERMINATION AND FACTORS AFFECTING

617 DeBary 1874

2228 Pape 1926

984 Green 1932

## VARIETAL RESISTANCE AND SUSCEPTIBILITY

984 Green 1932

2207 Palm 1932

**ENTYLOMA ERYNGII** (Corda) DeBary, Bot. Ztg. 32: 105. 1874.*Physoderma eryngii* Corda, Icon. Fung. 3: 3. 1839.*Protomyces eryngii* Fuck., Symb. Mycol. 75. 1869.*Entyloma eryngii-plani* Cif., Bull. Soc. Bot. Ital. 1924: 54. 1924.

## MISCELLANEOUS

Longevity of spores; at least 11 years 779 Fischer 1936

## SPORE GERMINATION AND FACTORS AFFECTING

617 DeBary 1874

3266 Woronin 1882

**ENTYLOMA ESCHSCHOLTZIAE** Harkn. Calif. Acad. Sci. 1: 40. 1884.

## MISCELLANEOUS

Taxonomic study of, with other species on Papaveraceae 2625 Savile 1946

**ENTYLOMA FERGUSSONI** (Berk. and Br.) Plowr. British Uredineae and Ustilagineae, 289. 1889.*Protomyces fergussoni* Berk. and Br., Ann. Mag. Nat. Hist. IV. 15: 36. 1875.*Entyloma canescens* Schröt., Beitr. Biol. Pflanz. (Cohn) 2: 273. 1877.

## CULTURE ON ARTIFICIAL MEDIA

1424 Kaiser 1936

## CYTOLOGY

1424 Kaiser 1936

## LIFE HISTORY, PARASITISM AND FACTORS AFFECTING

2655 Schellenberg 1911

1424 Kaiser 1936

## MISCELLANEOUS

Morphology and symptoms 2655 Schellenberg 1911

Host range and morphology 1724 Liro 1938

## PHYSIOLOGIC SPECIALIZATION

1424 Kaiser 1936

## SPORE GERMINATION AND FACTORS AFFECTING

2698 Schröter 1877

2329 Plowright 1889

2655 Schellenberg 1911

1424 Kaiser 1936

**ENTYLOMA FUSCUM** Schröt. Beitr. Biol. Pflanz. (Cohn) 2: 373. 1877.*Entyloma fuscum* Rabenh., Fung. Europ. 2495. 1878.*Entyloma bicolor* Zopf., Rabenh., Fung. Europ. 2496. 1878.

## LIFE HISTORY, PARASITISM AND FACTORS AFFECTING

2698 Schröter 1877

MISCELLANEOUS

- Morphology and symptoms 2655 Schellenberg 1911
- Incidence and symptoms in Germany 1898 Mehlisch 1935
- Host range and history 1724 Liro 1938
- Taxonomic study of, with other species on Papaveraceae 2625 Savile 1946

SPORE GERMINATION AND FACTORS AFFECTING

- 2655 Schellenberg 1911

**ENTYLOMA GLAUCII** Dang. Le Botaniste 4: 12. 1894.

*Entyloma fuscillum* Sacc., in Herb.

CYTOLOGY

- 578 Dangeard 1891
- 581 Dangeard 1894

HETEROTHALLISM AND SEX

- 579 Dangeard 1892
- 581 Dangeard 1894
- 762 Ferry 1895

LIFE HISTORY, PARASITISM AND FACTORS AFFECTING

- 578 Dangeard 1891
- 581 Dangeard 1894
- 762 Ferry 1895

MISCELLANEOUS

- Should be included in *E. fuscum* 2625 Savile 1946

**ENTYLOMA HIERACII** H. and P. Sydow Ann. Mycol. 16: 244. 1918. nom. nud.

*Entyloma calendulae* f. *hieracii* Schröt., Beitr. Biol. Pflanz. (Cohn) 2: 439. 1876.

MISCELLANEOUS

- Host range and morphology 1724 Liro 1938

**ENTYLOMA IRREGULARE** Johans. Oefvers, Kongl. Svensk. Vet. Akad. Förh. 41: 159. 1885.

MISCELLANEOUS

- Morphology and symptoms 2655 Schellenberg 1911

**ENTYLOMA LEPROIDEUM** Trabut Compt. Rend. Acad. Sci. Paris 118: 1288-1289. 1894.

MISCELLANEOUS

- Symptoms and morphology but no formal description of the species 3028 Trabut 1894

**ENTYLOMA LINARIAE** Schröt. Beitr. Biol. Pflanz. (Cohn) 2: 371. 1877.

CULTURE ON ARTIFICIAL MEDIA

- 1047 Hanna 1938

CYTOLOGY

- 1047 Hanna 1938

## MISCELLANEOUS

- Morphology and symptoms 2655 Schellenberg 1911  
 Produces two distinct types of conidia 1047 Hanna 1938  
 Host range and morphology 1724 Liro 1938

**ENTYLOMA LOBELIAE** Farl. Bot. Gaz. 8: 275. 1883.

## CULTURE ON ARTIFICIAL MEDIA

1047 Hanna 1938

## CYTOLOGY

1047 Hanna 1938

## MISCELLANEOUS

Only one type of conidia produced 1047 Hanna 1938

**ENTYLOMA MAGNUSII** (Ule) Wor. Abh. Senc. Nat. Ges. 12: 580 1882.

*Sorosporium magnusii* Ule, Hedwigia 17: 20. 1878.

*Ustilago magnusii* Wint., Rabenh. Krypt. Fl. 1: 87. 1881. p.p.

## LIFE HISTORY, PARASITISM AND FACTORS AFFECTING

3266 Woronin 1882

## MISCELLANEOUS

Host range and morphology 1724 Liro 1938

## SPORE GERMINATION AND FACTORS AFFECTING

3266 Woronin 1882

**ENTYLOMA MATRICARIAE** Rostr. Thüm., Mycoth. Univ. 222 1884.

*Entyloma matricariae* Trail, Plowr., Brit. Ured. and Ust. 291. 1889.

*Entyloma trailii* Masee, Brit. Fungi No. 192. 1891.

*Entyloma leucanthi* H. and P. Sydow, Ann. Mycol. 1: 237. 1903.

*Entyloma lagerheimi* Cif., Atti R. Ist. Bot. Univ. Pavia, n.s. 1: 92. 1924.

## MISCELLANEOUS

Morphology and symptoms 2655 Schellenberg 1911

**ENTYLOMA MELILOTI** McAlp. Smuts of Australia 195. 1910.

## MISCELLANEOUS

Two distinct types of conidia produced 1047 Hanna 1938

**ENTYLOMA MENISPERMI** Farl. and Trel. Bot. Gaz. 8: 275. 1883.

## CULTURE ON ARTIFICIAL MEDIA

1047 Hanna 1938

## CYTOLOGY

1047 Hanna 1938

## MISCELLANEOUS

Produces two distinct types of conidia 1047 Hanna 1938

**ENTYLOMA MICROSPORUM** (Unger) Schröt. Rabenh. Fui Europ. 1872. 1874.

*Protomyces microsporum* Unger, Exanth. Pflanz. 343. 1883.

*Entyloma ungerianum* DeBary, Bot. Ztg. 32: 105. 1874.

LIFE HISTORY, PARASITISM AND FACTORS AFFECTING

617 DeBary 1874

MISCELLANEOUS

Morphology and symptoms 2655 Schellenberg 1911

Host range 1724 Liro 1938

SPORE GERMINATION AND FACTORS AFFECTING

617 DeBary 1874

2329 Plowright 1889

**ENTYLOMA NEPHROLEPIDES** Racib. Parasit. Alg. u. Pilz. Javas  
3: 8. 1900.

MISCELLANEOUS

Morphology and symptoms 2394 Raciborski 1900

SPORE GERMINATION

2394 Raciborski 1900

**ENTYLOMA NYMPHAEAE** (D. D. Cunningham) Setchell Bot. Gaz.  
19: 189. 1894.

*Ramphospora nymphaeae* D. D. Cunningham, Sci. Med. Off. Army India  
3: 32. 1888.

*Entyloma castaliae* Holw., Davis in Trans. Wis. Acad. Sci. 11: 174. 1897.

CULTURE ON ARTIFICIAL MEDIA

1047 Hanna 1938

CYTOLOGY

2392 Raciborski 1896

2393 Raciborski 1897

1751 Lutman 1910

MISCELLANEOUS

Only one type of conidia produced 1047 Hanna 1938

Host range and morphology 1724 Liro 1938

SPORE GERMINATION AND FACTORS AFFECTING

563 Cunningham 1888

2392 Raciborski 1896

596 Davis 1896 (as *E. castaliae*)

2393 Raciborski 1897

**ENTYLOMA ORYZAE** H. and P. Sydow Ann. Mycol. 12: 197.  
1914.

MISCELLANEOUS

Incidence in lower Mississippi Valley in U. S. 3059 Tullis 1934

**ENTYLOMA POLYSPORIUM** (Peck) Farl. Bot. Gaz. 8: 275. 1883.

*Protomyces polysporius* Peck, Thüm, Mycoth. Univ. 1813. 1881.

CULTURE ON ARTIFICIAL MEDIA

1047 Hanna 1938

MISCELLANEOUS

Emended description and comparison with other species on Compositae 2627 Savile 1947

**ENTYLOMA RANUNCULI** (Bonorden) Schröt. Beitr. Biol. Pflanz.  
(Cohn) 2: 370. 1877.

*Fusidium ranunculi* Bonorden, Handb. Mycol. 43. 1851.

*Protomyces ficariae* Cornu and Roze, Bull. Soc. Bot. (France) 22: 161. 1874.

*Entyloma ungerianum* f. *ficariae* Wint., Rabenh. Fungi Europ. 1873. 1874.

*Entyloma ficariae* Thüm. (see Mycoth. Univ. 219), Fisch. v. Waldh., Bull. Soc. Nat. Imp. Mosc. 4: 309. 1877.

*Entyloma verruculosum* Fisch v. Waldh., Bull. Soc. Imp. Nat. Mosc. 4: 310. 1877. p.p.

**CULTURE ON ARTIFICIAL MEDIA**

312 Brefeld 1889

2838 Stempell 1935

**CYTOLOGY**

1459 Kharbush 1927

2838 Stempell 1935

**LIFE HISTORY, PARASITISM AND FACTORS AFFECTING**

2698 Schröter 1877

312 Brefeld 1883

3180 Ward 1887

2655 Schellenberg 1911

2838 Stempell 1935

**MISCELLANEOUS**

Morphology and symptoms 2655 Schellenberg 1911

Conidial stage = *Fusidium leptospermum* Pass. 1689 Lind 1913

Destructive effects on *Helleborus niger* in France 79 Arnaud 1919

Clamp connections on the mycelium 2732 Seyfert 1927

Chlamydospores in culture 2838 Stempell 1935

Two distinct types of conidia produced 1047 Hanna 1938

Host range and morphology 1724 Liro 1938

**SPORE GERMINATION AND FACTORS AFFECTING**

617 DeBary 1874

3180 Ward 1887

2329 Plowright 1889

2655 Schellenberg 1911

**ENTYLOMA SEROTINUM** Schröt. Beitr. Biol. Pflanz. (Cohn) 2:  
437. 1877.

*Entyloma luteo-maculans* Hume, Proc. Iowa Acad. Sci. 9: 238. 1902.

**CULTURE ON ARTIFICIAL MEDIA**

1853 Marchal and Sternon 1924

1424 Kaiser 1936 Marchal and Sternon's cultures are of some other fungus

**MISCELLANEOUS**

Morphology and symptoms 2655 Schellenberg 1911

Incidence and symptoms in Germany 1898 Mehlisch 1935

Host range and morphology 1724 Liro 1938



**ENTYLOMA THALICTRI** Schröt. Krypt. Fl. Schles. 3: 282. 1887.

*Entyloma ranunculi* f. *thalictri* Farl., Bot. Gaz. 8: 275. 1883.

MISCELLANEOUS

Morphology 2655 Schellenberg 1911

Host range and morphology 1724 Liro 1938

**ENTYLOMA TRIGONELLAE** Stevenson Mycologia 38: 524-533. 1946.

MISCELLANEOUS

Morphology, with technical description and Latin diagnosis  
2848 Stevenson 1946

**ENTYLOMA VERRUCULOSUM** Pass. Nouvo Gior. Bot. Ital. 9: 239. 1877.

MISCELLANEOUS

Morphology 2655 Schellenberg 1911

**FARYSIA NIGRA** G. H. Cunningham Trans. New Zeal. Inst. 56: 78. 1926.

*Elateromyces niger* G. H. Cunningham, Trans. New Zeal. Inst. 55: 416. 1924.

MISCELLANEOUS

Technical description and Latin diagnosis 564 Cunningham 1924

SPORE GERMINATION AND FACTORS AFFECTING

564 Cunningham 1924

**FARYSIA OLIVACEA** (DC.) H. and P. Sydow Ann. Mycol. 17: 41. 1919.

*Uredo olivacea* DC., Fl. France 6: 78. 1815.

*Caeoma olivaceum* Schlecht., Fl. Berol. 2: 130. 1824.

*Erysibe olivacea* Wallr., Fl. Crypt. Germ. 2: 215. 1833.

*Ustilago olivacea* Tul., Ann. Sci. Nat. III. 1847.

*Ustilago thümenii* Fisch. v. Waldh., Hedwigia 17: 40. 1878.

*Ustilago olivacea* Tul. var. *pseudo-cyperii* Sacc., Ann. Soc. Cien. Argentina 11: 21. 1881.

*Ustilago olivacea* forma *pseudocyperii* Sacc., Syll. Fung. 7: 463. 1888.

*Ustilago catenata* Ludwig, Zeit. Pflanz. 3: 139. 1893.

*Contractia caricicola* P. Henn., Hedwigia 34: 325. 1895.

*Ustilago subolivacea* P. Henn., Ann. R. Istit. Bot. Roma 6: 84. 1897.

*Ustilago caricicola* Tracy and Earle, Bull. Torr. Bot. Club 26: 493. 1899.

*Elateromyces olivacea* Bubak, Houby Ceske 2: 32. 1912.

*Stilbella olivacea* Jaap, Ann. Mycol. 14: 43. 1916.

*Farysia olivacea* Hönel, Ann. Mycol. 15: 293. 1917.

*Farysia americana* Cif., Ann. Mycol. 29: 73. 1931.

*Farysia zeylanica* Liro, Ann. Bot. Soc. Zool.-Bot. Vanama 6: 7. 1935.

*Farysia catenata* Sydow, Ann. Mycol. 35: 26. 1937.

*Farysia caricis* (DC.) Liro, Ann. Sci. Fenn. A, 42: 49. 1938.

CULTURE ON ARTIFICIAL MEDIA

312 Brefeld 1883

LIFE HISTORY, PARASITISM AND FACTORS AFFECTING

2327 Plowright 1881

312 Brefeld 1883

2395 Raciborski 1909

1763 McAlpine 1910

321 Brefeld 1912

772 Fischer 1920

#### MISCELLANEOUS

Symptoms and morphology 312 Brefeld 1883

Symptoms and morphology 1763 McAlpine 1910

Symptoms and morphology 2655 Schellenberg 1911

Host range 1724 Liro 1938

#### SPORE GERMINATION AND FACTORS AFFECTING

312 Brefeld 1883

2329 Plowright 1889

1763 McAlpine 1910

564 Cunningham 1924

3279 Yen 1937

1724 Liro 1938

**GLOMOSPORIUM AMARANTHI** Hirschh. Mycologia 37: 280. 1945

#### MISCELLANEOUS

Morphology, symptoms and comparison with *G. leptideum* 1212  
Hirschhorn 1945

**GLOMOSPORIUM LEPTIDEUM** (Sydow) Kochman Acta. Soc. Bot. Polon. 16: 58. 1939.

*Tolyposporium leptideum* Sydow, Ann. Mycol. 11: 365. 1913.

*Thecaphora leptideum* Zundel, Mycologia 29: 583. 1937.

#### MISCELLANEOUS

*Tolyposporium leptideum* type of genus 1511 Kochman 1939

#### SPORE GERMINATION AND FACTORS AFFECTING

1511 Kochman 1939

**MELANOPSICHIMUM AUSTRO-AMERICANUM** (Speg.) G. Beck  
Ann. Nat. K. K. Hofmus. (Wien) 9: 122. 1894.

*Ustilago austro-americana* Speg., Ann. Soc. Cien. Argent. 12: 63. 1881.

*Sphacelotheca austro-americana* Liro, Ann. Acad. Sci. Fenn. A, 17: 150. 1924.

#### LIFE HISTORY, PARASITISM AND FACTORS AFFECTING

2902 Sydow and Butler 1907

1763 McAlpine 1910

1720 Liro 1924

1972 Moesz 1927

#### MISCELLANEOUS

History and morphology 1720 Liro 1924

Reasons for placing in *Sphacelotheca* 1720 Liro 1924

Host range 1720 Liro 1924

#### SPORE GERMINATION AND FACTORS AFFECTING

2159 Norton 1896

2902 Sydow and Butler 1907

**MELANOPSICHIUM ELEUSINIS** (Kulk.) Mundk. and Thirum. Imp.  
Mycol. Inst. Mycol. Pap. No. 16. 1946.

*Ustilago eleusinis* Kulk., Ann. Appl. Biol. (India) 9: 184-186. 1922.

*Ustilago eleusinis* H. Sydow, Ann. Mycol. 27: 421. 1929.

**CYTOLOGY**

2975 Thirumalachar and Mundkur 1947

**LIFE HISTORY, PARASITISM AND FACTORS AFFECTING**

1589 Kulkarni 1922

1776 McRae 1929

2975 Thirumalachar and Mundkur 1947

**MISCELLANEOUS**

Morphology and symptoms 1589 Kulkarni 1922

Morphology and symptoms 2975 Thirumalachar and Mundkur  
1947

**SPORE GERMINATION AND FACTORS AFFECTING**

1589 Kulkarni 1922

2975 Thirumalachar and Mundkur 1947

**MELANOPSICHIUM EMODENSIS** (Berk.) Zundel Ustilaginales of  
the World

*Ustilago emodensis* Berk., in Hooker's Jour. of Botany 3: 202. 1851.

*Ustilago treubii* Solms, Ann. Jour. Bot. (Buitenzorg) 6: 79. 1887.

*Ustilago rosulata* H. and P. Sydow, Ann. Mycol. 10: 77. 1902.

*Elateromyces treubii* Bubak, Houbey Ceske 2: 33. 1912.

*Farysia emodensis* H. and P. Sydow, Ann. Mycol. 17: 42. 1919.

*Liroa emodensis* Cif., Nuovo Giorn. Bot. Ital. n.s. 40: 264. 1933

**HETEROTHALLISM AND SEX**

2777 Solms 1887 (fusion of sporidia)

**MISCELLANEOUS**

Morphology and symptoms 2777 Solms 1887

Type of species of genus *Liroa*; Latin diagnosis n. gen. and n. sp.  
470 Ciferri 1933

**SPORE GERMINATION AND FACTORS AFFECTING**

2777 Solms 1887

**MELANOTAENIUM CINGENS** (Beck.) Magnus Österr. Bot.  
Zeitschr. 42: 38. 1892.

*Ustilago cingens* Beck, Österr. Bot. Zeitschr. 31: 313. 1881.

*Melanotaenium caulinum* Schröt., Krypt. Schles. 3: 285. 1887. (based on

*Ustilago calium* Schneider in litt. 1871 as per Magnus 1892).

*Cintractia* ? *cingens* DeToni, Sacc. Syll. Fung. 7: 481. 1888.

**MISCELLANEOUS**

Morphology and symptoms 315 Brefeld 1895

Morphology and symptoms 2655 Schellenberg 1911

**SPORE GERMINATION AND FACTORS AFFECTING**

1422 Juel 1894

315 Brefeld 1895

**MELANOTAENIUM ENDOGENUM** (Unger) DeBary Bot. Ztg. 32: 106. 1874.*Protomyces endogenum* Unger, Exanth. d. Pflanz. 342. 1833.*Protomyces galii* Nees., Das Syst. d. Pilze. p. 10. 1837.*Physoderma endogenum* Cornu, Ann. Sci. Nat. Bot. VI. 15: 291. 1883.**LIFE HISTORY, PARASITISM AND FACTORS AFFECTING**

3266 Woronin 1882

1689 Lind 1913

**MISCELLANEOUS**

Morphology and symptoms 2655 Schellenberg 1911

Host range 1724 Liro 1938

**SPORE GERMINATION AND FACTORS AFFECTING**

3266 Woronin 1882

2655 Schellenberg 1911

**MELANOTAENIUM HYPOGAEUM** (Tul.) Schellenb. Beitr. Krypt. Schweiz 3: 108. 1911.*Ustilago ? hypogaea* Tul., Fungi Hypogali 196. 1851.*Ustilago hypogaea* Fisch. v. Waldh., Apercu Syst. Ustilag. p. 18. 1877.**LIFE HISTORY, PARASITISM AND FACTORS AFFECTING**

2655 Schellenberg 1911

**MISCELLANEOUS**

Morphology and symptoms 2655 Schellenberg 1911

**MELANOTAENIUM LAMII** Beer Trans. Brit. Mycol. Soc. 6: 331-343. 1920.**MISCELLANEOUS**Morphology and general considerations of the entire genus 183  
Beer 1920**CYTOLOGY**

183 Beer 1920

**MUNDKURELLA HEPTAPLEURI** Thirum. Mycologia 36: 596. 1944.**CYTOLOGY**

2969 Thirumalachar 1944

**LIFE HISTORY, PARASITISM AND FACTORS AFFECTING**

2969 Thirumalachar 1944

**SPORE GERMINATION AND FACTORS AFFECTING**

2969 Thirumalachar 1944

**NEOVOSIA BARCLAYANA** Bref. Unters. Gesammt. Myk. 12: 170. 1895.*Tilletia barclayana* Sacc. and Sydow, Sacc. Syll. Fung. 14: 422. 1899.**CONTROL**

436 Chevalier 1931

**LIFE HISTORY, PARASITISM AND FACTORS AFFECTING**

315 Brefeld 1895

## MISCELLANEOUS

Morphology and symptoms 315 Brefeld 1895

Possible incidence on *Pennisetum typhoideum*, in Senegal 436  
Chevalier 1931

SPORE GERMINATION AND FACTORS AFFECTING  
315 Brefeld 1895

**NEOVOSSIA HORRIDA** (Takahashi) Padwick and Azmatullah Khan  
Imp. Mycol. Inst. (New Delhi) Mycol. Pap. No. 10: 2. 1944.

*Tilletia horrida* Takahashi, Bot. Mag. Tokyo 10: 20. 1896.

## CONTROL

2482 Reyes 1939

## CULTURE ON ARTIFICIAL MEDIA

3095 Vanterpool 1932

548 Cralley 1934

## LIFE HISTORY, PARASITISM AND FACTORS AFFECTING

26,27 Anderson 1899

28 Anderson 1902

402 Butler 1913

2584 Rutgers 1914

2481 Reyes 1933

2482 Reyes 1939

446 Chowdhury 1946

## MISCELLANEOUS

Presence in rice feed meal 767 Filter 1911

## SPORE GERMINATION AND FACTORS AFFECTING

2955 Teng 1931

3095 Vanterpool 1932

548 Cralley 1934

1688 Lin 1936

2203 Padwick and Khan 1944

**NEOVOSSIA INDICA** (Mitra) Mundkur Trans. Brit. Mycol. Soc.  
24: 313. 1940.

*Tilletia indica* Mitra, Ann. App. Biol. 18: 178. 1931.

## CONTROL

1963 Mitra 1935

1964 Mitra 1937

## CULTURE ON ARTIFICIAL MEDIA

2402 Ramamoorthy and Mundkur 1944

## LIFE HISTORY, PARASITISM AND FACTORS AFFECTING

1963 Mitra 1935

1964 Mitra 1937

2200 Padwick 1939 (effect of irrigation on incidence)

2058 Mundkur 1943 (each smut ball represents a separate local  
infection caused by wind-borne sporidia)

## MISCELLANEOUS

Technical description of species 1962 Mitra 1931

Parts of host affected 1962 Mitra 1931

Comparison of *Tilletia indica* with *T. caries* and *T. foetida* 1962 Mitra 1935

Not systemic or seed borne or soil borne but each smut ball represents a separate local infection caused by wind-borne sporidia 2058 Mundkur 1943

Comparison with *T. caries* and *T. foetida* 2058 Mundkur 1943

## SPORE GERMINATION AND FACTORS AFFECTING

1963 Mitra 1935

## NEOVOSIA MOLINIAE (Thüm.) Korn. Österr. Bot. Zeitschr. 29: 217. 1879.

*Vossia moliniae* Thüm, Österr. Bot. Zeitschr. 29: 19. 1879; Myc. Univ. 1319. 1879.

*Sorosporium vossianum* Thüm., Mycoth. Univ. 1319. 1879.

*Tilletia moliniae* Wint., in Rabenh. Krypt. Fl. 1: 109. 1881.

## CULTURE ON ARTIFICIAL MEDIA

315 Brefeld 1895

## LIFE HISTORY, PARASITISM AND FACTORS AFFECTING

313 Brefeld 1888

315 Brefeld 1895

1831 Magnus 1900

## MISCELLANEOUS

Symptoms and morphology 315 Brefeld 1895

Morphology and symptoms 2655 Schellenberg 1911

Morphology 1724 Liro 1938

## SPORE GERMINATION AND FACTORS AFFECTING

315 Brefeld 1895

2655 Schellenberg 1911

## SCHIZONELLA COLEMANI Iyengar and Narasimhan Phytopath. 12: 435. 1922.

## MISCELLANEOUS

Morphology and symptoms 1334 Iyengar and Narasimhan 1922

## SCHIZONELLA MELANOGRAMMA (DC.) Schröt. Beitr. Biol. Pflanz. (Cohn) 2: 362. 1877.

*Uredo melanogramma* (DC.), Fl. France 6: 75. 1815.

*Caeoma melanogramma* Schlecht., Linnaea 1: 238. 1826.

*Puccinia melanogramma* Unger, Einf. Bodens 217. 1836.

*Thecaphora melanogramma* Lev., Ann. Sci. Nat. Bot. III, 8: 373. 1847.

*Ustilago destruens afolicola* Hausman, Erb. Critt. Ital. 1300. 1865.

*Geminella foliicola* Schröt., Abh. Schles. Ges. Vaterl. Cult. Abth. Naturw. Med., 1869-72: 6. 1869.

*Urocystis pusilla* Cooke and Peck, Rept. N. Y. State Mus. Nat. Hist. 25: 90. 1873.

*Ustilago ambiens* Karsten, Oefv. K. Svensk. Vet. Akad. Forh. 29: 108. 1873.

*Geminella melanogramma* Magnus, Hedwigia 14: 19. 1875.

*Entyloma ambiens* Johans., Oefv. K. Svensk. Vet. Akad. Forh. 41: 160. 1884.  
*Schizonella pusilla* Cif., Ann. Mycol. 29: 20. 1931.

## CULTURE ON ARTIFICIAL MEDIA

315 Brefeld 1895

## LIFE HISTORY, PARASITISM AND FACTORS AFFECTING

2698 Schröter 1877

315 Brefeld 1895

2655 Schellenberg 1911

## MISCELLANEOUS

Morphology 315 Brefeld 1895

Morphology and symptoms 2655 Schellenberg 1911

Host range 1724 Liro 1938

## SPORE GERMINATION AND FACTORS AFFECTING

2698 Schröter 1877

313 Brefeld 1888

315 Brefeld 1895

2655 Schellenberg 1911

**SCHROETERIA DECAISNEANA** (Boudier) DeToni Sacc. Syll.  
 Fung. 7: 501. 1888.

*Geminella decaisneana* Boudier, Bull. Soc. Mycol. (France), 3: 150. 1887.

## CYTOLOGY

760 Ferdinandsen and Winge 1914

## MISCELLANEOUS

Morphology 2655 Liro 1938

## SPORE GERMINATION AND FACTORS AFFECTING

2698 Schröter 1877

321 Brefeld 1912

**SCHROETERIA DELASTRINA** (Tul.) Wint. Rabenh. Krypt. Fl. 1:  
 117. 1881.

*Thecaphora delastrina* Tul., Ann. Sci. Nat. III. 7: 7. 1847.

*Geminella delastrina* Schröt., Beitr. Biol. Pflanz. (Cohn) 2: 5. 1877.

*Schroeteria delastrina* var. *reticulata* Cocconi, Rend. Sess. Acad. Sci. Bologna,  
 n.s. 2: 219. 1898.

## CULTURE ON ARTIFICIAL MEDIA

312 Brefeld 1883

## LIFE HISTORY, PARASITISM AND FACTORS AFFECTING

3237 Winter 1876

312 Brefeld 1883

287 Boudier 1886

288 Boudier 1887

499 Cocconi 1897

3093 Vanderyst 1903

## MISCELLANEOUS

Host range and morphology 1724 Liro 1938

## SPORE GERMINATION AND FACTORS AFFECTING

3056 Tulasne and Tulasne 1847

2698 Schröter 1877

312 Brefeld 1883

**SOROSPORIUM ANDROPOGONIS-SORGHII** S. Ito. Trans. Sapporo

Nat. Hist. Soc. 14: 79. 1935.

## MISCELLANEOUS

Morphology and symptoms; technical description and Latin diagnosis. In ovaries and pedicels of sorghum 1328 Ito 1935

**SOROSPORIUM ARGENTINUM** Speg. Anal. Soc. Cien. Argent. 12:

64. 1881.

*Ustilago negeriana* Dietel, Hedwigia Beibl. 37: 147. 1898.*Ustilago argentinum* Speg., Revista Argent. Bot. 1: 151. 1926.

## MISCELLANEOUS

Morphology and symptoms 1191 Hirschhorn 1939

**SOROSPORIUM ARISTIDAE-CYANANTHAE** (Bref.) Zundel Ustilaginales of the World*Ustilago aristidae cyananthae* Bref., Unters. Gesamt. Myk. 12: 102. 1895.

## CULTURE ON ARTIFICIAL MEDIA

315 Brefeld 1895

## LIFE HISTORY, PARASITISM AND FACTORS AFFECTING

315 Brefeld 1895

## MISCELLANEOUS

Morphology 315 Brefeld 1895

## SPORE GERMINATION AND FACTORS AFFECTING

315 Brefeld 1895

**SOROSPORIUM CONSANGUINEUM** Ell. and Ev. Jour. Mycol. 3:

56. 1887.

*Ustilago aristidae* Peck, Bull. Torr. Bot. Club 12: 35. 1885.*Sorosporium aristidae* Neger, Ann. Univ. Santiago, Chile, 93: 789. 1896.*Sorosporium bornmulleri* P. Magnus, Verh. Zool.-Bot. Ges. (Wien) 1900: 434.

## CYTOLOGY

1211 Hirschhorn 1945

## MISCELLANEOUS

Symptoms and morphology 1763 McAlpine 1910

## SPORE GERMINATION AND FACTORS AFFECTING

2159 Norton 1896

1763 McAlpine 1910

796 Fischer and Hirschhorn 1945

**SOROSPORIUM CRYPTUM** (McAlp.) Smuts of Australia, p. 176. 1910.*Ustilago crypta* McAlp, Proc. Linn. Soc. New S. Wales 32: 42. 1897.

## LIFE HISTORY, PARASITISM AND FACTORS AFFECTING

1763 McAlpine 1910



## MISCELLANEOUS

Symptoms and morphology 1763 McAlpine 1910

## SPORE GERMINATION AND FACTORS AFFECTING

1763 McAlpine 1910

**SOROSPORIUM ENTEROMORPHUM** (McAlp.) Smuts of Australia, p. 177. 1910.

*Ustilago enteromorpha* McAlp., Agric. Gaz. New S. Wales 7: 154. 1896.

## MISCELLANEOUS

Symptoms and morphology 1763 McAlpine 1910

**SOROSPORIUM EVERHARTII** Ell. and Gall. Jour. Mycol. 6: 32. 1890.

*Uredo syntherismae* Ravenel (not Schweinitz), Ravenel Fung. Car. 2: 98. 1853.

*Ustilago cesatii* Fisch. v. Wald., Aperçu Syst. Ust. p. 25. 1877. p.p.

*Tolyposporium everhartii* Dietel, Engl. and Prantl Nat. Pflanz. 1: 14. 1897.

*Sorosporium syntherismae* Amer. Auct. p.p.

## MISCELLANEOUS

Sori much smaller in staminal than in ovarian tissues 1065 Hansing and Lefebvre 1941

**SOROSPORIUM MELANDRII** Sydow Ann. Mycol. 32: 286. 1934.

## MISCELLANEOUS

Longevity of spores; at least two years 779 Fischer 1936

## SPORE GERMINATION AND FACTORS AFFECTING

3266 Woronin 1882

**SOROSPORIUM NEILII** G. H. Cunningham Trans. New Zeal. Inst. 55: 428. 1924.

## MISCELLANEOUS

Morphology, technical description and Latin diagnosis 564 Cunningham 1924

## SPORE GERMINATION AND FACTORS AFFECTING

564 Cunningham 1924

**SOROSPORIUM PASPALI-THUNBERGII** (P. Henn.) S. Ito Trans. Sapporo Nat. Hist. Soc. 14: 94. 1935.

*Ustilago paspali-thunbergii* P. Henn., Hedwigia 43: 140. 1904.

*Sorosporium paspali* McAlp., Smuts of Australia, p. 180. 1910.

## CONTROL

2622 Sattar 1930

## LIFE HISTORY, PARASITISM AND FACTORS AFFECTING

2622 Sattar 1930

## SPORE GERMINATION AND FACTORS AFFECTING

2622 Sattar 1930

**SOROSPORIUM PILULIFORMIS** (Berk.) McAlpine Smuts of Australia, p. 180. 1910.

*Uredo piluliformis* Berk., Hooker's Jour. Bot. (London) 2: 423. 1843.

*Ustilago piluliformis* Tul., Ann. Sci. Nat. Bot. III. 7: 93. 1847.

- Ustilago marmorata* Berk., Jour. Linn. Soc. 13: 174. 1873.  
*Ustilago mulleriana* Thüm., Mycoth. Univ. 623. 1877.  
*Cintractia piluliformis* P. Henn., Hedwigia 27: 37. 1898.  
*Cintractia muelleriana* Cif., Ann. Mycol. 29: 72. 1931.

LIFE HISTORY, PARASITISM AND FACTORS AFFECTING  
 1763 McAlpine 1910

MISCELLANEOUS

Symptoms and morphology 1763 McAlpine 1910

**SOROSPORIUM SAPONARIAE** F. Rudolphi Linnaca 4: 116. 1829.

- Caeoma schlechtendalii* Klotz., Herb. Viv. Mycol. 87. 1832.  
*Schizoderma saponariae* Fries, Syst. Mycol. 3: 477. 1832.  
*Ustilago rudolphi* Tulasne, Ann. Sci. Nat. III. 7: 99. 1847.  
*Microbotryum rudolphi* Leveille, Diet. Univ. Hist. Nat. 12: 787. 1849.  
*Thecaphora tunicae* Auderswald, Österr. Bot. Zeitschr. 18: 242. 1868.  
*Urocystis purpurea* Hazslinsky, Math. Termes. Magyar. Akad. 14: 82. 1876.  
*Sorosporium dianthorum* Cif., Ann. Mycol. 26: 24. 1928.  
*Sorosporium gypsophilae* Cif., Ann. Mycol. 26: 25. 1928.  
*Sorosporium silenis-inflatae* Cif., Ann. Mycol. 26: 26. 1928.  
*Sorosporium alsinearum* Cif., Ann. Mycol. 26: 27. 1928.  
*Sorosporium purpureum* Liro, Ann. Acad. Sci. Fenn. A. 42: 63. 1938.  
*Sorosporium stellariae* Liro, Ann. Acad. Sci. Fenn. A. 42: 62. 1938.  
*Sorosporium dianthi-superbi* Liro, Ann. Sci. Fenn. A. 42: 65. 1938.

LIFE HISTORY, PARASITISM AND FACTORS AFFECTING

- 3056 Tulasne 1847  
 615 DeBary 1863  
 803 Fischer v. Waldheim 1869  
 2297 Phillips and Plowright 1881  
 3266 Woronin 1882  
 2389 Plowright 1889  
 2655 Schellenberg 1911  
 1689 Lind 1913  
 1724 Liro 1938

MISCELLANEOUS

- Morphology and symptoms 2655 Schellenberg 1911  
 Incidence in Oregon on *Silene* and *Stellaria* 1338 Jackson 1920  
 Host range 1724 Liro 1938

PHYSIOLOGIC SPECIALIZATION

- 1724 Liro 1938

SPORE GERMINATION AND FACTORS AFFECTING

- 3266 Woronin 1882  
 315 Brefeld 1895  
 2655 Schellenberg 1911  
 1689 Lind 1913

**SOROSPORIUM SETARIAE** McAlp. Smuts of Australia, p. 183. 1910.

LIFE HISTORY, PARASITISM AND FACTORS AFFECTING  
 1763 McAlpine 1910

## MISCELLANEOUS

Symptoms and morphology 1763 McAlpine 1910

## SPORE GERMINATION AND FACTORS AFFECTING

1763 McAlpine 1910

**SOROSPORIUM SIMII** Pole Evans So. Afr. Jour. Sci. 12: 543. 1916.

## MISCELLANEOUS

Distinct from *S. reilianum* 3342 Zundel 1930

**SOROSPORIUM SOLIDUM** (Berk.) McAlp. Smuts of Australia, p. 183. 1910.

*Ustilago solida* Berk., Fl. Tasmania 2: 270. 1860. (In Hooker, Bot. Antarctic Voyage 3: 2. 1860).

*Urocystis solida* Fisch. v. Waldh., Apercu Syst. Ust. p. 38. 1877.

## LIFE HISTORY, PARASITISM AND FACTORS AFFECTING

1763 McAlpine 1910

**SOROSPORIUM SYNTHERRISMAE** (Peck) Farl. Farlow and Seymour Host Index, N. A. Fungi 152. 1891.

*Ustilago syntherrismae* Peck, Ann. Rept. N. Y. State Museum 27: 103. 1875.

*Sorosporium cenchri* P. Henn., Hedwigia 35: 221. 1896.

## CULTURE ON ARTIFICIAL MEDIA

1871 Martin and Kernkamp 1941

1870 Martin 1943

## CYTOLOGY

1870 Martin 1943

## HYBRIDIZATION AND GENETICS

1870 Martin 1943 (with *Sphacelotheca destruens*)

## MISCELLANEOUS

Longevity of spores; at least 7 years 779 Fischer 1936

Effect of incubation temperatures on percentage of smut 1384

Johnson, Rodenhiser and Lefebvre 1940

Buff mutant produced 1385 Johnson, Rodenhiser and Lefebvre 1940

## SPORE GERMINATION AND FACTORS AFFECTING

2159 Norton 1896

1517 Kolk 1943

1870 Martin 1943

796 Fischer and Hirschhorn 1945

**SOROSPORIUM TUMEFACIENS** McAlp. Smuts of Australia, p. 184. 1910.

## MISCELLANEOUS

Symptoms and morphology 1763 McAlpine 1910

## SPORE GERMINATION AND FACTORS AFFECTING

1763 McAlpine 1910

**SPHACELOTHECA ANDROPOGONIS-ANNULATI** (Bref.) Zundel Mycologia 22: 132. 1930.

*Ustilago andropogonis-annulati* Bref., Unters. Gesamt. Myk. 12: 109. 1895.

## CULTURE ON ARTIFICIAL MEDIA

315 Brefeld 1895

## LIFE HISTORY, PARASITISM AND FACTORS AFFECTING

315 Brefeld 1895

## MISCELLANEOUS

Morphology 315 Brefeld 1895

## SPORE GERMINATION AND FACTORS AFFECTING

315 Brefeld 1895

**SPHACELOTHECA ARUNDINELLAE** (Bref.) Mundkur Trans.  
Brit. Mycol. Soc. 23: 113. 1939.*Ustilago arundinellae* Bref., Unters. Gesamt. Myk. 12: 108. 1895.

## CULTURE ON ARTIFICIAL MEDIA

315 Brefeld 1895

## MISCELLANEOUS

Morphology 315 Brefeld 1895

## SPORE GERMINATION AND FACTORS AFFECTING

315 Brefeld 1895

**SPHACELOTHECA BARCINONENSIS** Riofrio Bol. Real. Soc. Esp.  
Hist. Nat. 23: 192-195. 1923.

## MISCELLANEOUS

Morphology and symptoms 2503 Riofrio 1923

## SPORE GERMINATION AND FACTORS AFFECTING

2503 Riofrio 1923

**SPHACELOTHECA BICORNIS** (P. Henn.) Zundel Mycologia 22:  
140. 1930.*Ustilago bicornis* P. Henn., Hedwigia 35: 50. 1896.

## SPORE GERMINATION AND FACTORS AFFECTING

3118 Viegas 1944

**SPHACELOTHECA BOREALIS** (Clint.) Schellenb. Ann. Mycol. 5:  
386. 1907.*Sphacelotheca hydropiperis* var. *borealis* Clint., Proc. Boston Nat. Hist. 31:  
395. 1904.

## MISCELLANEOUS

Morphology and symptoms 2654 Schellenberg 1907

Morphology and symptoms 2655 Schellenberg 1911

## SPORE GERMINATION AND FACTORS AFFECTING

2654 Schellenberg 1907

2655 Schellenberg 1911

**SPHACELOTHECA BOSNIACA** (Beck) Maire Bull. Soc. Bot.  
France Ser. IV. 8: 150. 1908.*Uredo bistortarum ustilaginea* DC., Fl. France 6: 76. 1815.*Ustilago bosniaca* Beck, Ann. k.k. Nat. Hofmus. (Wien) 9: 121. 1894.*Sphacelotheca alpina* Schellenb., Ann. Mycol. 5: 392. 1907.

## LIFE HISTORY, PARASITISM AND FACTORS AFFECTING

- 174 Beck 1894  
 2872 Strohmeyer 1896  
 2654 Schellenberg 1907 (as *S. alpina*)  
 2655 Schellenberg 1911 (as *S. polygoni-alpini* and *S. alpina*)  
 1720 Liro 1924

## MISCELLANEOUS

- Symptoms and morphology as *S. alpina* 2654 Schellenberg 1907  
 Symptoms and morphology as *S. alpina* 2655 Schellenberg 1911  
 History and comparative morphology with related forms 1720 Liro 1924  
 Synonymy 1720 Liro 1924

## SPORE GERMINATION AND FACTORS AFFECTING

- 2655 Schellenberg 1911 (as *S. alpina*)

## SPHACELOTHECA CRUENTA (Kühn) Potter Phytopath. 2: 98. 1912.

- Ustilago cruenta* Kühn, Hamburg Gart. Blumenztg. 28: 178. 1872.  
*Ustilago tulasnei* Kühn, Rabenh., Fungi Europ. 1997. 1875.

## CONTROL

- 277 Borghardt 1932  
 2910 Takasugi and Akaishi 1933  
 1669 Leukel 1943

## CULTURE ON ARTIFICIAL MEDIA

- 312 Brefeld 1883  
 314 Brefeld 1895  
 2515 Rodenhiser 1932  
 2517 Rodenhiser 1934  
 2745 Shih 1938

## CYTOLOGY

- 2517 Rodenhiser 1934

## HETEROTHALLISM AND SEX

- 311 Brefeld 1883 (sporidial fusions)  
 2515 Rodenhiser 1932  
 2519 Rodenhiser and Barnes 1933  
 2517 Rodenhiser 1934  
 2745 Shih 1938

## HOST RANGE

- 1397 Johnston *et al.* 1938 (on Johnson grass, *Sorghum halepense*)

## HYBRIDIZATION AND GENETICS

- 2516 Rodenhiser 1933 (with *Sphacelotheca sorghi*)  
 2519 Rodenhiser and Barnes 1933  
 2517 Rodenhiser 1934 (with *Sphacelotheca sorghi*)  
 3081 Vaheeduddin 1936 (with *Sphacelotheca reiliana*)  
 2518 Rodenhiser 1937 (with *Sphacelotheca sorghi*)  
 3082 Vaheeduddin 1938 (with *Sphacelotheca reiliana*)  
 3083 Vaheeduddin 1942 (with *Sphacelotheca reiliana*)

## LIFE HISTORY, PARASITISM AND FACTORS AFFECTING

- 311 Brefeld 1883
- 313 Brefeld 1888
- 314 Brefeld 1895
- 322 Brefeld and Falk 1905
- 2453 Reed and Faris 1924
- 2454 Reed and Faris 1924
- 732 Faris and Reed 1925
- 1868 Martin and Ratliffe 1927
- 2911 Takasugi and Akaishi 1937
- 2745 Shih 1938

## MISCELLANEOUS

- Comparison with other Sorghum smuts 1576 Kühn 1878
- Infection of host by injecting sporidial suspensions 313 Brefeld 1888
- Effect on host as compared with *S. sorghi* 2424 Reed 1923
- Local infection of floral structures 732 Faris and Reed 1925
- Second crop of Feterita smutted where none appeared in first crop 1868 Martin and Ratliffe 1927
- Successful inoculation by hypodermic injection 3318 Zehner and Humphrey 1929
- Spores not toxic to rodents, cattle and fowl 1135 Heller *et al.* 1930
- Genetic data in support of specific distinction of *S. cruenta* from *S. sorghi* 2517 Rodenhiser 1934
- Comparison with *S. holci* 1397 Johnston *et al.* 1938
- As cause of hay fever and asthma 3246 Wittich 1939
- Incidence in Italian E. Africa on sorghum 425 Castellani 1940
- Severity in Nebraska 574 Cushing *et al.* 1940
- Hay fever produced by 2296 Phillips 1940
- Sori in both staminal and ovarial tissues 1065 Hansing and Lefebvre 1941

## PHYSIOLOGIC SPECIALIZATION

- 1907 Melchers 1933
- 2518 Rodenhiser 1937 (distinct race on Johnson grass)

## SPORE GERMINATION AND FACTORS AFFECTING

- 311 Brefeld 1883
- 403 Butler 1918
- 1586 Kulkarni 1918
- 2910 Takasugi and Akaishi 1933
- 2517 Rodenhiser 1934
- 2911 Takasugi and Akaishi 1937
- 2745 Shih 1938
- 1517 Kolk 1943

## VARIETAL RESISTANCE AND SUSCEPTIBILITY AND INHERITANCE

- 1587 Kulkarni 1921
- 2424 Reed 1923
- 1591 Kulkarni 1924

2444 Reed 1936

2911 Takasugi and Akaishi 1937

1909 Melchers 1940

**SPHACELOTHECA CYMBOPOGONIS** Yen Rev. Mycol. 3: 7. 1938.

#### CYTOLOGY

3281 Yen 1938

#### MISCELLANEOUS

Morphology and symptoms 3281 Yen 1938

#### SPORE GERMINATION AND FACTORS AFFECTING

3281 Yen 1938

**SPHACELOTHECA DESTRUENS** (Schlecht.) Stevenson and Johnson  
Phytopath. 34: 613. 1944.

*Uredo (Ustilago) segetum* subsp. *panici-miliacei* Pers., Syn. Fung. 224. 1801.

*Uredo (Ustilago) segetum* var. *panici* Albertini and Schwein., Consp. Fung. 130. 1805.

*Uredo carbo* var. *panici-miliacei* DC., Fl. France 6: 76. 1815.

*Caeoma destruens* Schlecht., Fl. Berol. 2: 130. 1824. Link, in Willdenow Sp. Pl. 6: 3. 1824.

*Uredo destruens* Duby, Bot. Gall. 901. 1830.

*Erysibe panicorum* var. *panici-miliacei* Wallr., Fl. Krypt. Germ. 2: 216. 1833.

*Ustilago carbo* var. *destruens* Tul., Ann. Sci. Nat. III. 7: 81. 1847.

*Tilletia destruens* Lev., Ann. Sci. Nat. III. 8: 372. 1848.

*Ustilago destruens* Schlecht., Rabenh. in Klotzsch, Herb. Viv. Mycol. ed. 2. 400. 1856.

*Ustilago panici-miliacei* Wint., in Rabenh. Krypt. Fl. 1: 89. 1884.

*Sorosporium panici-miliacei* Tok., Bot. Mag. (Tokyo) 16: 184, 247. 1902.

*Sphacelotheca panici-miliaceae* Bubak, Houby Ceska 2: 27. 1912.

#### CONTROL

1269 Hori 1901

2877 Stuart 1901

2909 Takahashi 1902

3097 Vasey 1918

1598 Kutin 1921

2816 Stakman and Lambert 1923

2751 Sigriansky 1925

1007 Gussow and Conners 1927

3273 Yatzynina 1927

22 Alexeyeff 1928 (effect of high temperatures on spore viability and germination)

276 Borghardt 1928

278 Borghardt 1932

1514 Köck 1932

1657 Leszczenko 1935

2256 Perevesentzeva 1935 (use of magnesium arsenite)

2588 Ryakhovsky 1935

2589 Ryakhovsky and Gamarnik 1935

2486 Richter and Müller 1943

## CULTURE ON ARTIFICIAL MEDIA

- 311 Brefeld 1883 (as *U. panici-miliacei*)  
 1871 Martin and Kernkamp 1941  
 1870 Martin 1943

## CYTOLOGY

- 1870 Martin 1943

## HETEROTHALLISM AND SEX

- 311 Brefeld 1883 (fusions between cells of promycelium)  
 159 Bauch 1934 (sporidial fusions with bipolar species)

## HYBRIDIZATION AND GENETICS

- 159 Bauch 1934  
 1870 Martin 1943 (with *Sorosporium syntherismae*)

## LIFE HISTORY, PARASITISM AND FACTORS AFFECTING

- 311 Brefeld 1883 (as *U. panici-miliacei*)  
 322 Brefeld and Falk 1905  
 1271 Hori 1907  
 1763 McAlpine 1910  
 3097 Vasey 1918  
 2163 Novopokrovski and Skaskin 1925  
 22 Alexeyeff 1928  
 1409 Jones and El Nasr 1938

## MISCELLANEOUS

- Eight-year-old herbarium material still viable (as *U. panici-miliacei*) 311 Brefeld 1883  
 Symptoms and morphology 1763 McAlpine 1910  
 Morphology and symptoms 2655 Schellenberg 1911  
 Spores disseminated by beetle (*Phalacrus politus*) 3097 Vasey 1918  
 Heavy losses due to in Russia 2751 Sigriansky 1925  
 Effect of smut on development of the host 388 Buchheim and Schmanev 1926  
 Control reduced considerably when treated seed is stored for any length of time before planting 3273 Yatzynina 1927  
 Heavy infestation responsible for difficult breathing of peasants during threshing 129 Balakhenoff 1928  
 Influence on development of host 385 Buchheim 1930  
 Morphological responses of the host to infection 385 Buchheim 1930  
 Stimulatory effects of ether 704 Enomoto 1934  
 Influence on development of host 386 Buchheim 1935  
 Fresh spores germinate less freely 1737 Lobik and Dahlstrem 1936  
 First report in Sweden 1705 Lindfors 1939  
 Symptoms and review of literature 2486 Richter and Müller 1943  
*S. destruens* the valid name for the broomcorn millet fungus 2850 Stevenson and Johnson 1944



## SPORE GERMINATION AND FACTORS AFFECTING

- 311 Brefeld 1883 (as *U. panici-miliacei*)  
 2163 Novopokrovsky and Skaskin 1925  
 22 Alexeyeff 1928  
 1737 Lobik and Dahlstrem 1936 (temperature range for germination,  
 1737 Lobik and Dahlstrem 1936 (methods of)  
 3279 Yen 1937  
 1870 Martin 1943  
 796 Fischer and Hirschhorn 1945

## SPHACELOTHECA DIGITARIAE (Kunze) Clint. N. A. Flora 7: 998. 1939.

- Uredo digitariae* Kunze, Holl. Flora 13: 369. 1830.  
*Ustilago digitariae* f. *panici-repentis* Kühn, Hedwigia 15: 5. 1876. (Rabenh. Fungi Europ. 2099, f. 11).  
*Ustilago pallida* Körn., Hedwigia 16: 34. 1877.  
*Ustilago digitariae* Wint., Rabenh. Krypt. Fl. 1: 88. 1881.

## MISCELLANEOUS

- Morphology and symptoms 2655 Schellenberg 1911  
 Changed to *Sorosporium digitariae* n. comb. 2201 Padwick 1946

## SPHACELOTHECA EXSERTA (McAlp.) Cif. Ann. Mycol. 26: 32. 1928 (nom. nud.)

- Cintractia exserta* McAlp., Smuts of Australia, p. 170. 1910.  
*Sphacelotheca exserta* Yen, Contr. Inst. Bot. Nat. Acad. Peiping 4: 196. 1936.

## LIFE HISTORY, PARASITISM AND FACTORS AFFECTING

- 1763 McAlpine 1910

## MISCELLANEOUS

- Symptoms and morphology 1763 McAlpine 1910

## SPHACELOTHECA HOLCI Jackson Monogr. Univ. Puerto Rico. B. No. 2: 259. 1934.

## SPORE GERMINATION AND FACTORS AFFECTING

- 1517 Kolk 1943

## SPHACELOTHECA HYDROPIPERIS (Schum.) DeBary.

- Uredo hydropiperis* Schum., enum. Pl. Saell. 2: 234. 1804.  
*Uredo bistortarum ustilaginea* DC., Fl. France 6: 76. 1815. p.p.  
*Caeoma utriculosum* Link, in Willdenow, Sp. Pl. 6: 9. 1825. p.p.  
*Erysibe utriculosa* Wallr., Fl. Krypt. Germ. 2: 216. 1833.  
*Ustilago candollei* Tul., Ann. Sci. Nat. Bot. III. 7: 187. 1884.  
*Sphacelotheca granosa* Liro, Ann. Acad. Sci. Fenn. A. 17: 148. 1924.

## HETEROTHALLISM AND SEX

- 315 Brefeld 1895 (fusion of sporidia)

## LIFE HISTORY, PARASITISM AND FACTORS AFFECTING

- 619 DeBary 1884  
 2654 Schellenberg 1907 (as *U. candollei*)  
 1720 Liro 1924

MISCELLANEOUS

- Morphology 315 Brefeld 1895
- Morphology and symptoms 2655 Schellenberg 1911
- History and morphology 1720 Liro 1924
- Host range 1720 Liro 1924

PHYSIOLOGIC SPECIALIZATION

1720 Liro 1924

SPORE GERMINATION AND FACTORS AFFECTING

- 803 Fischer v. Waldheim 1869
- 2704 Schröter 1887
- 2559 Rostrup 1890
- 315 Brefeld 1895
- 2654 Schellenberg 1907 (as *U. candollei*)
- 2655 Schellenberg 1911 (as *U. candollei*)

**SPHACELOTHECA HYDROPIPERIS var. COLUMELLIFERA (Tul.)**

Zundel. Ustilaginales of the World.

*Ustilago hydropiperis* var. *columellifera* Tul., Berk., in Jour. Linn. Soc. (London), 13: 174. 1873. Cooke, Handbook Australian Fungi 237. 1892.

LIFE HISTORY, PARASITISM AND FACTORS AFFECTING

1763 McAlpine 1910

**SPHACELOTHECA INFLORESCENTIAE (Trel.) Maire** Österr. Bot.

Zeitschr. 57: 273. Oct. 1907.

*Uredo bistortarum ustilagineae* DC. p.p., Fl. France 6: 76. 1815.

*Ustilago bistortarum* var. *inflorescentiae* Trel., Harriman Alaska Exp. Crypt. 35. 1904.

*Ustilago inflorescentiae* Maire, Bull. Soc. Bot. (France). 54: 149. 1907.

*Sphacelotheca polygoni-vivipari* Schellenb., Ann. Mycol. 5: 388. Oct. 1907. (Appeared Nov. 1907).

*Sphacelotheca inflorescentiae* Jaap, Ann. Mycol. 6: 194. 1908.

LIFE HISTORY, PARASITISM AND FACTORS AFFECTING

- 2654 Schellenberg 1907 (as *S. polygoni-vivipari*)
- 1935 Migula 1910
- 3225 Wilson 1924
- 1720 Liro 1924

MISCELLANEOUS

- Morphology and symptoms 2654 Schellenberg 1907
- Comparative morphology with *S. borealis* and *S. hydropiperis* 2654 Schellenberg 1907
- History and morphology (as *U. ustilagineae*) 1720 Liro 1924
- Comparative morphology with *S. borealis* and *S. hydropiperis* 3225 Wilson 1924
- Considered as synonym of *Ustilago bistortarum* 1213 Hirschhorn 1947

PHYSIOLOGIC SPECIALIZATION

2655 Schellenberg 1911 (as *S. polygoni-vivipari*)

## SPORE GERMINATION AND FACTORS AFFECTING

2654 Schellenberg 1907 (as *S. polygoni-vivipari*)2655 Schellenberg 1911 (as *S. polygoni-vivipari*)**SPHACELOTHECA ISCHAEMI** (Fuck.) Clint. Jour. Mycol. 8: 140. 1902.*Uredo (Ustilago) andropogoni* Opiz, Naturw. 1823-24: 43. 1823. (doubtful description).*Ustilago ischaemi* Fuck., Ver. Nat. Nassau. 15: 22. 1861.*Ustilago cylindrica* Peck, Bot. Gaz. 7: 55. 1882.*Cintractia ischaemi* H. and P. Sydow, Österr. Bot. Zeitschr. 51: 12. 1901.*Sphacelotheca andropogonis* Bubak, Naturw. Landes. Böhm. 15: 25. 1916.*Sphacelotheca ischaemi* f. *heteropogonis* Bacc., Ann. Bot. (France) 14: 131. 1917.

## CULTURE ON ARTIFICIAL MEDIA

286 Boss 1927

## CYTOLOGY

286 Boss 1927

## LIFE HISTORY, PARASITISM AND FACTORS AFFECTING

647 Dietel 1897

2655 Schellenberg 1911

## MISCELLANEOUS

Morphology 311 Brefeld 1883

Morphology and symptoms 2655 Schellenberg 1911

Chlamydospores (haploid) in culture 286 Boss 1927

## SPORE GERMINATION AND FACTORS AFFECTING

311 Brefeld 1883

3282 Yen 1938

**SPHACELOTHECA MICROSPORA** (P. Henn.) Cif. Bot. Archiv. 34: 532. 1932.*Ustilago microspora* Schröt. and Henn., Hedwigia 35: 215. 1895.*Ustilago paspali* Speg., Ann. Mus. Nac. Buenos Aires 6: 209. 1898.*Ustilago paspali-notati* P. Henn., in Herb. Holway, see Jour. Mycol. 8: 140. 1902.*Sphacelotheca paspali-notati* Clint., Jour. Mycol. 8: 140. 1902.

## MISCELLANEOUS

Comparative morphology on various hosts and localities 1191 Hirschhorn 1939

**SPHACELOTHECA MÖLLERI** (Bref.) Liro Ann. Acad. Sci. Fenn. 17: 158. 1924.*Ustilago mölleri* Bref., Unters. Gesamt. Myk. 12: 132. 1895.

## MISCELLANEOUS

Morphology and description 315 Brefeld 1895

## SPORE GERMINATION AND FACTORS AFFECTING

315 Brefeld 1895

**SPHACELOTHECA MONTANIENSIS** (Ell. and Holw.) Clint. Jour. Mycol. 8: 141. 1902.

*Ustilago montaniensis* Ell. and Holw., Jour. Mycol. 6: 119. 1891.

**LIFE HISTORY, PARASITISM AND FACTORS AFFECTING**  
29 Anderson 1889

**MISCELLANEOUS**

Importance on *Muhlenbergia* spp. in Montana 29 Anderson 1889  
Adverse effects on hosts 29 Anderson 1889

**SPHACELOTHECA PAMPARUM** (Speg.) Clint Jour. Mycol. 8: 140. 1902.

*Ustilago setariae* Speg., Ann. Soc. Cien. Argent. 10: 5. 1880. Not *U. setariae* Niessl.

*Ustilago pamparum* Speg., Ann. Soc. Cien. Argent. 17: 89. 1884.

*Ustilago kolaczekii* Kühn, Rabenh.-Wint. Fungi Europ. 3401. 1886.

**MISCELLANEOUS**

Nomenclatorial note and synonymy 472 Ciferri 1934

**SPORE GERMINATION AND FACTORS AFFECTING**  
1191 Hirschhorn 1939

**SPHACELOTHECA PAPPOPHORI** (Pat.) Zundel Ustilaginales of the World.

*Ustilago pappophori* Pat., Bull. Soc. Mycol. (France) 22: 199. 1906.

*Ustilago pappophori* Pat., var. *magdalensis* Hirschh., Darwiniana 3: 397. 1934.

*Ustilago magdalensis* Hirschh., Ann. Soc. Cien. Argent. 83: 217. 1942.

**SPORE GERMINATION AND FACTORS AFFECTING**  
1191 Hirschhorn 1939

**SPHACELOTHECA REILIANA** (Kühn) Clint. Jour. Mycol. 8: 141. 1902.

*Ustilago holci-sorghi* Riv., Parassiti veg. 422. 1873. (sub. *U. holci-sorghi*) (nomen dubium).

*Ustilago reiliana* Kühn, in Rabenh., Fungi Europ. 1998. 1875.

*Ustilago reiliana* f. *zeae* Pass., in Rabenh., Fungi Europ. 2096. 1876.

*Ustilago pulveracea* Cooke, Grevillea 4: 115. 1876.

*Cintractia sorghi* DeToni, Sacc. Syll. Fung. 7: 48. 1888.

*Endothlaspis sorghi* Sorokine, Rev. Mycol. 12: 4. 1890.

*Ustilago abortifera* Speg., Ann. Mus. Nac. Buenos Aires II. 6: 207. 1899.

*Cintractia reiliana* Clint., Ill. Agric. Expt. Sta. Bull. 57: 346. 1900.

*Ustilago* (*Cintractia*) *reiliana* f. *follicola* Kell., Ohio (State Univ.) Nat. 1: 9. 1900.

*Sorosporium reilianum* McAlp., Smuts of Australia, 181. 1910.

*Sphacelotheca sorghi* Speg., Rivista Arg. Bot. 1: 150. 1925.

*Spacelotheca sorokiniana* Cif., Ann. Mycol. 26: 2. 1928.

*Sphacelotheca holci-sorghi* Cif., Fl. Ital. Crypt. Fasc. 17: 267. 1938.

**CONTROL**

1761 McAlpine 1910

2068 Munerati 1910

1901 Melchers 1916

360 Britton-Jones 1922

- 3169 Wallace 1931
- 277, 278 Borghardt 1932
- 337 Bressman and Barss 1933

## CULTURE ON ARTIFICIAL MEDIA

- 2349 Potter 1914 (including production of chlamydospores in culture)
- 1214 Hirschhorn and Hirschhorn 1935 (including development of chlamydospores)

## CYTOLOGY

- 1039, 1040 Hanna 1929

## HETEROTHALLISM AND SEX

- 1039, 1040 Hanna 1929

## HYBRIDIZATION AND GENETICS

- 3065 Tyler and Shumway 1935 (with *Sphacelotheca sorghi*)
- 3081 Vaheeduddin 1936 (with *Sphacelotheca cruenta*)
- 3083 Vaheeduddin 1942 (with *Sphacelotheca cruenta*)

## LIFE HISTORY, PARASITISM AND FACTORS AFFECTING

- 2242 Passerini 1877
- 311 Brefeld 1883
- 479 Clinton 1900
- 1442, 1443 Kellerman 1900
- 1444 Kellerman and Jennings 1902
- 2021 Mottareale 1903
- 1271 Hori 1907
- 1761 McAlpine 1910
- 2348 Potter 1912
- 2349 Potter 1914
- 360 Britton-Jones 1922
- 451 Christensen 1926
- 935, 936 Geschele 1927
- 2463 Reed, Swabey and Kolk 1927
- 1039, 1040 Hanna 1929
- 337 Bressman and Barss 1933
- 1486 Kispatic 1948

## MISCELLANEOUS

- Comparison with other Sorghum smuts 1576 Kühn 1878
- Spores still viable after 8 years 311 Brefeld 1883
- Dry sporidia viable after several months 311 Brefeld 1883
- Incidence and importance in S. Africa 2067 Mundy 1910
- Incidence and importance in S. Africa 719 Evans 1911
- Incidence in California 1783 Mackie 1920
- Biological peculiarities 936 Geschele 1927
- Smutty sorghum grain non-toxic to chickens, cattle and horses 1135 Heller *et al.* 1930
- Prevalent and severe in Soviet Russia 277 Borghardt 1932
- Abnormal vegetative proliferation of the ears of infected plants 337 Bressman and Barss 1933

- Incidence in Oregon 337 Bressman and Barss 1933  
 Influence on development of host 386 Buchheim 1935  
 Longevity of spores; 2 years in herbarium material 779 Fischer 1936  
 Serological differentiation from related species 172 Beck 1938  
 Suspected as contributing to corn smut poisoning of children in Yugoslavia 1891 Mayerhofer and Dragisic 1938  
 Incidence in Italian E. Africa 425 Castellani 1940  
 Severity in Nebraska 574 Cushing *et al.* 1940  
 Introduction into Yugoslavia 1486 Kispatic 1948

## PHYSIOLOGIC SPECIALIZATION

- 2463 Reed, Swabey and Kolk 1927 (smut on corn and sorghum considered distinct although they will cross-infect to some extent)  
 337 Bressman and Barss 1933 (smut from corn would not infect sorghum)  
 1486 Kispatic 1948

## SPORE GERMINATION AND FACTORS AFFECTING

- 311 Brefeld 1883  
 2159 Norton 1896  
 1763 McAlpine 1910  
 360 Britton-Jones 1922  
 3282 Yen 1938

## VARIETAL RESISTANCE AND SUSCEPTIBILITY, AND INHERITANCE OF

- 337 Bressman and Barss 1933

SPHACELOTHECA ROTTBOELLIAE (Sydow and Butler) Mundkur  
Trans. Brit. Mycol. Soc. 23: 111. 1939.

- Ustilago rottboelliae* Sydow and Butler, Ann. Mycol. 5: 486. 1907.  
*Cintractia densa* McAlp., Smuts of Australia, p. 168. 1910.  
*Ustilago rottboelliae* Miyake, Bot. Mag. (Tokyo) 27: 42. 1913.  
*Sphacelotheca densa* Cif., Ann. Mycol. 26: 32. 1928.

## SPORE GERMINATION AND FACTORS AFFECTING

- 1209 Hirschhorn 1943

SPHACELOTHECA SACCHARI (Rabenh.) Cif. Fl. Ital. Crypt.  
Fasc. 17: 262. 1938.

- Ustilago sacchari* Rabenh., Sitzungsber. Nat. Ges. Isis (Dresden) 1870: 227. 1871.  
*Ustilago sacchari-ciliaris* Bref., Unters. Gesamt. Myk. 12: 109. 1895.

## MISCELLANEOUS

- Probably synonymous with *Cintractia pulverulenta* Cooke and Masse 2897 Sydow 1924  
 Comparison with other smuts on *Saccharum* and *Erianthus* 2897 Sydow 1924  
 Comparison with other sugar cane smuts 1198 Hirschhorn 1941  
 Identical with *U. sacchari-ciliaris* Bref. Both should be called *Sphac. sacchari* 2056 Mundkur 1942

**SPHACELOTHECA SCHWEINFURTHIANA** (Thüm.) Sacc. Ann. Mycol. 6: 554. 1908.

*Ustilago schweinfurthiana* Thüm., Mycoth. Univ. 726. 1877.

**CULTURE ON SYNTHETIC MEDIA**

315 Brefeld 1895

157 Bauch 1932

3278 Yen 1937

**HETEROTHALLISM AND SEX**

157 Bauch 1932

159 Bauch 1934

**HYBRIDIZATION AND GENETICS**

159 Bauch 1934 (sporidial fusions with bipolar species)

**MISCELLANEOUS**

Morphology 315 Brefeld 1895

First report on *Saccharum* (*S. munja*) 1458 Khanna and Ramnathan 1946

Effect on host 1458 Khanna and Ramnathan 1946

**SPORE GERMINATION AND FACTORS AFFECTING**

315 Brefeld 1895

157 Bauch 1932

**SPHACELOTHECA SORGHASTRI** Zundel Phytopath. 32: 544. 1942.**MISCELLANEOUS**

Technical description, Latin diagnosis, and brief account of distribution 1881 Massey and Zundel 1942

**SPHACELOTHECA SORGHI** (Link) Clint. Jour. Mycol. 8: 140. 1892.

*Sporisorium sorghi* Link, in Willdenow, Sp. Pl. 6: 86. 1825.

*Tilletia sorghi-vulgaris* Tul., Ann. Sci. Nat. III, 7: 116. 1847.

*Ustilago sorghi* Pass., Thüm., Hedwigia 12: 114. 1873.

*Cintractia sorghi-vulgaris* Clint., Bull. Ill. Agric. Expt. Sta. 47: 404. 1897.

*Sphacelotheca sorghi-saccharati* Siemaszko, In Herb. Caucasus 1918.

**CONTROL**

479 Clinton 1900

1117, 1118 Hecke 1902

1119 Hecke 1903

3043 Trzebinski 1906

2508 Roberts and Freeman 1907

720 Evans 1914

1901 Melchers 1916

360 Britton-Jones 1922

2816 Stakman and Lambert 1923

2984 Thompson 1923

1398 Johnston and Melchers 1924

1915 Melchers and Walker 1924

- 1903 Melchers 1925
- 824 Flor 1927
- 1426 Kamat 1927
- 1914 Melchers and Johnston 1927
- 1399 Johnston and Melchers 1928
- 3075 Uppal and Desai 1931
- 3169 Wallace 1931
- 277 Borghardt 1932
- 696 El-Helaly 1939
- 1672, 1673 Leukel and Nelson 1939
- 1410, 1411 Jones and ElNasr 1940
- 2019 Morwood 1941
- 1770 McDougal 1941
- 3083 Vaheeduddin 1942
- 390 Buchholtz 1943
- 1669 Leukel 1943
- 1066 Hansing and Melchers 1944
- 1592 Kulkarni 1944
- 1671 Leukel and Livingston 1945
- 105 Asthana 1947
- 2020 Morwood 1947

#### CULTURE ON ARTIFICIAL MEDIA

- 765 Ficke and Johnston 1930
- 2515 Rodenhiser 1932
- 2517 Rodenhiser 1934
- 1324 Isenbeck 1935
- 3063 Tyler 1938

#### CYTOLOGY

- 2515 Rodenhiser 1934
- 3063 Tyler 1938

#### HETEROTHALLISM AND SEX

- 2515 Rodenhiser 1932
- 2519 Rodenhiser and Barnes 1933
- 2515 Rodenhiser 1934
- 3062 Tyler 1934
- 1324 Isenbeck 1935
- 3063 Tyler 1938
- 3282 Yen 1938 (sporidial fusions)
- 3083 Vaheeduddin 1942

#### HYBRIDIZATION AND GENETICS

- 2515 Rodenhiser 1932
- 2516 Rodenhiser 1933 (with *Sphacelotheca cruenta*)
- 2519 Rodenhiser and Barnes 1933 (with *Sphacelotheca cruenta*)
- 2517 Rodenhiser 1934 (with *Sphacelotheca cruenta*)
- 3065 Tyler and Shumway 1935 (with *Sorosporium reilianum*)
- 3081 Vaheeduddin 1936 (with *Sphacelotheca cruenta*)
- 2518 Rodenhiser 1937 (with *Sphacelotheca cruenta*)



- 3063 Tyler 1938 (intraspecific)
- 3082 Vaheeduddin 1938 (intraspecific)
- 1630 Laskaris 1939 (intraspecific)
- 1631 Laskaris 1941 (intraspecific)
- 3083 Vaheeduddin 1942 (intraspecific crosses)

## LIFE HISTORY, PARASITISM AND FACTORS AFFECTING

- 1574 Kühn 1877
- 2372 Prillieux 1895
- 647 Dietel 1897
- 479 Clinton 1900
- 401 Busse 1904
- 322 Brefeld and Falk 1905
- 1763 McAlpine 1910
- 2348 Potter 1912
- 1586 Kulkarni 1918
- 360 Britton-Jones 1922
- 1590 Kulkarni 1922
- 2453, 2454 Reed and Faris 1924
- 1906 Melchers 1933
- 1324 Isenbeck 1935
- 595 Davis 1938
- 1913 Melchers and Hansing 1938
- 696 El-Helaly 1939
- 959, 960 Goidanich and Scardovi 1946

## MISCELLANEOUS

- Comparisons with other sorghum smuts 1576 Kühn 1878
- Spores in herbarium material 6½ years old still viable 1678 von Liebenberg 1879
- Variable symptomology according to host variety 401 Busse 1904
- Infected broom corn almost worthless for making brooms 1763 McAlpine 1910
- Symptoms and importance 1763 McAlpine 1910
- On kaffir corn in S. Africa 720 Evans 1914
- Spore longevity six years or more 360 Britton-Jones 1922
- Comparison with *S. cruenta* re macromorphology 2424 Reed 1923
- Comparison with *S. cruenta* re macromorphology 2453 Reed and Faris 1924
- Influence of temperature, moisture and soil pH on infection 2453 Reed and Faris 1924
- Incidence of on *Andropogon sorghum* in Australia 421 Carne 1927
- Effect of digestive processes on spore viability 766 Ficke and Melchers 1929
- Spores non-toxic to horses 766 Ficke and Melchers 1929
- Spores non-toxic to rodents, cattle and fowl 1135 Heller *et al.* 1930
- Comparative morphology of 5 physiologic forms 1912 Melchers *et al.* 1932

- Comparative morphology of physiologic races 1912 Melchers, Ficke and Johnston 1932
- Belated development 1906 Melchers 1933
- Origin of new races through intra- and interspecific hybridization with *S. cruenta* 2517 Rodenhiser 1934
- Genetic data supporting specific identity of *S. sorghi* from *S. cruenta* 2517 Rodenhiser 1934
- Spores very finely warty, not smooth 3275 Yen 1934
- Viability of spores, at least 13 years 779 Fischer 1936
- High incidence in Kansas 1647 Lefebvre and Johnston 1937
- Atypical symptoms resembling *S. reiliana* 1647 Lefebvre and Johnson 1937
- Cases of respiratory allergy 3248 Wittich and Stakman 1937
- Seriological differentiation from closely related species 172 Beck 1938
- New physiologic race by intraspecific hybridization 3082 Vaheeduddin 1938
- Transferred to genus *Cintractia* 1192 Hirschhorn 1939
- As cause of hay fever and asthma 3246 Wittich 1939
- Lysis in intraspecific crosses 1630 Laskaris 1939
- Incidence in Italian E. Africa on sorghum 425 Castellani 1940
- Severity in Nebraska 574 Cushing *et al.* 1940
- Sori in both staminal and ovarial tissues 1065 Hansing and Lefebvre 1941
- A heritable lysis in intraspecific crosses 1631 Laskaris 1941
- Incidence on sorghum in Nandi Hills 2976 Thirumalachar, Swamy and Basheer 1943
- Severity in Italy 959, 960 Goidanich and Scardovi 1946
- PHYSIOLOGIC SPECIALIZATION
- 3015 Tisdale, Melchers and Clemmer 1926
- 3016 Tisdale, Melchers and Clemmer 1927
- 765 Ficke and Johnston 1930
- 1911 Melchers *et al.* 1930
- 1912 Melchers *et al.* 1932
- 1912 Melchers *et al.* 1932 (comparative morphology of physiologic races)
- 3082 Vaheeduddin 1938
- 3083 Vaheeduddin 1942
- SPORE GERMINATION AND FACTORS AFFECTING
- 1678 von Liebenberg 1879
- 315 Brefeld 1895
- 2372 Prillieux 1895
- 478 Clinton 1897
- 2159 Norton 1898
- 479 Clinton 1900
- 1763 McAlpine 1910
- 403 Butler 1918

- 1586 Kulkarni 1918  
 360 Britton-Jones 1922  
 1590 Kulkarni 1922  
 2517 Rodenhiser 1934  
 3063 Tyler 1938  
 3282 Yen 1938  
 1517 Kolk 1943

VARIETAL RESISTANCE AND SUSCEPTIBILITY, AND INHERITANCE OF

- 479 Clinton 1900  
 853 Freeman and Umberger 1908  
 2354 Potter and Melchers 1918  
 1587 Kulkarni 1921  
 2424 Reed 1923  
 1591 Kulkarni 1924  
 2456 Reed and Melchers 1925  
 3015 Tisdale, Melchers and Clemmer 1926  
 3016 Tisdale, Melchers and Clemmer 1927  
 2894 Swanson and Parker 1931  
 2444 Reed 1936  
 1860, 1861 Marcy 1937  
 1909 Melchers 1940  
 959, 960 Goidanich and Scardovi 1946

**SPHACELOTHECA STRANGULANS** (Issat.) Clint. Proc. Bost. Soc. Nat. Hist. 31: 392. 1904.

*Ustilago strangulans* Issatschenko, Scripta Bot. Hort. Univ. Petrop. 5: 225. 1896.

MISCELLANEOUS

Every plant of approximately one acre stand of *Eragrostis neomexicana* infected 994 Griffiths 1904

**SPHACELOTHECA VALESIACA** Schellenb. Beitr. Krypt. Schweiz 3: 61. 1911.

MISCELLANEOUS

Morphology and symptoms 2655 Schellenberg 1911

**SPHACELOTHECA VIEGASIANA** Zundel Mycologia 31: 588. 1931.

SPORE GERMINATION AND FACTORS AFFECTING

3118 Viegas 1944

**THECAPHORA ATERRIMA** Tul. Ann. Sci. Nat. Bot. III. 7: 110. 1847.

*Sorosporium atrum* Peck, Bot. Gaz. 5: 35. 1880.

*Tolyposporium aterrimum* Dietel, in Engler and Prantl, Nat. Pflanz. 1: (1) 14. 1897.

LIFE HISTORY, PARASITISM AND FACTORS AFFECTING

- 497 Cocconi 1890  
 2655 Schellenberg 1911

1689 Lind 1913

1724 Liro 1938

## MISCELLANEOUS

Morphology and symptoms 2655 Schellenberg 1911

Flowers hermaphroditic on infected plants 1689 Lind 1913

Host range 1724 Liro 1938

## SPORE GERMINATION AND FACTORS AFFECTING

497 Cocconi 1890

2655 Schellenberg 1911

**THECAPHORA CUNEATA** (Schofield) Clint. Jour. Mycol. 8: 146. 1902.*Sorosporium cuneatum* Schofield; Bessey, in Contr. Bot. Dept. Univ. Nebr. 3: 48. 1892.

## SPORE GERMINATION AND FACTORS AFFECTING

2159 Norton 1896

**THECAPHORA DEFORMANS** Dur. and Mont. Ann. Sci. Nat. Bot. III. 7: 110. 1847.*Thecaphora lathyri* Kühn, Rabenh. Fung. Europ. 1797. 1873.*Thecaphora affinis* Schneider, Jahresb. Schles. Ges. Vat. Kult. 52: 90. 1874.*Sorosporium desmondii* Peck, Bot. Gaz. 3: 35. 1878.*Sorosporium astragali* Peck, Bot. Gaz. 4: 218. 1879.*Thecaphora orobi* Zil., Cif., in Ann Mycol. 29: 61. 1931.

## LIFE HISTORY, PARASITISM AND FACTORS AFFECTING

311 Brefeld 1883

1876 Massalongo 1896

## MISCELLANEOUS

Morphology and symptoms 2655 Schellenberg 1911

## SPORE GERMINATION AND FACTORS AFFECTING

311 Brefeld 1883

2655 Schellenberg 1911

**THECAPHORA LATHYRI** Kühn Rabenh. Fungi Europ. 1797. 1873; Hedwigia 13: 58. 1874.*Sorosporium hyalinum* Wint., Rabenh. Krypt. Fl. 1: 105. 1881. p.p.*Sorosporium lathyri* Ortel, Deutsche Bot. Monatschrift 4: 88. 1886.*Thecaphora hyalina* Diedicke, Jahresb. Kgl. Akad. Gem. Wissensch. zu Erfurt N.F. 38: 313. 1910 p.p.*Thecaphora deformans* Dur. and Mont., Schellenb. in Beitr. Krypt. Schweiz 3: 158. 1911. p.p.

## LIFE HISTORY, PARASITISM AND FACTORS AFFECTING

311 Brefeld 1883

## MISCELLANEOUS

Morphology and symptoms 1565 Kühn 1874

Morphology and symptoms 311 Brefeld 1883

Morphology 1724 Liro 1938

## SPORE GERMINATION AND FACTORS AFFECTING

311 Brefeld 1883

**THECAPHORA SEMINIS-CONVOLVULI** (Desm.) Liro Ann. Acad. Sci. Fenn. A, 42: 317. 1938.

*Uredo seminis-convolvuli* Desm., Pl. Crypt. France, 1: 274. 1827; Duby Bot. Gall. 2: 901. 1830.

*Ustilago capsularum* Fries, Syst. Mycol. 3: 519. 1829.

*Thecaphora hyalina* Fingerhuth, Linnaea 10: 230. 1835.

*Sorosporium hyalinum* Wint., in Rabenh. Krypt. Fl. 1: 105. 1881. p.p.

*Thecaphora convolvuli* Rostr., Sack. Bot. Foren. Fest. 44: 157. 1890.

*Thecaphora convolvuli* Schilb., Gedenkbuch Ungar. Naturwiss. Ges. zu ihrem 50-jährigen Jubiläum, Budapest 1892: 623.

*Thecaphora capsularum* Magnus, Verhandl. Bot. Ver. Prov. Brandenb. 37: 80. 1895.

*Tubercinia convolvuli* Rostr., Veijledning i den Danske Fl. 2: 30. 1904.

*Thecaphora capsularum* Desm., according to Bubak in Archiv. Naturw. Land. Durschf. Böhm. 15: 37. 1916.

**HETEROTHALLISM AND SEX**

3266 Woronin 1882 (fusions between promycelial cells)

**LIFE HISTORY, PARASITISM AND FACTORS AFFECTING**

3266 Woronin 1882

2660 Schilberszky 1892

2661, 2662 Schilberszky 1895

1875 Massalongo 1896

2570 Rostrup 1898

**MISCELLANEOUS**

Dimorphism induced in *Convolvulus arvensis* 2660 Schilberszky 1892

Observations on the conidial stage 2570 Rostrup 1898

Morphology and symptoms 2655 Schellenberg 1911

Host range and morphology 1724 Liro 1938

**SPORE GERMINATION AND FACTORS AFFECTING**

3266 Woronin 1882

2329 Plowright 1889

2655 Schellenberg 1911

**THECAPHORA SOLANI** Barrus Phytopath, 34: 712-714. 1944.

**LIFE HISTORY, PARASITISM AND FACTORS AFFECTING**

141 Barrus and Müller 1943

**MISCELLANEOUS**

Technical description without Latin diagnosis; geographic distribution; effect on host 140 Barrus 1944

**THECAPHORA TRAILII** Cooke Grevillea 11: 155. 1883.

*Thecaphora cirsii* Boudier, Bull. Soc. Mycol. (France) 3: 149. 1887.

*Schizonella subtrifida* Ell. and Ev., Jour. Mycol. 6: 119. 1891. (N. Amer. Fungi 2266 hyponym 1889). (Type from Colorado, on *Circiuchrocentrum*.)

*Poikilosporium trailii* Vestergren, Micr. Rar. Sel. 452. 1902.

**LIFE HISTORY, PARASITISM AND FACTORS AFFECTING**

1724 Liro 1938

## MISCELLANEOUS

Host range 1724 Liro 1938

## PHYSIOLOGIC SPECIALIZATION

1724 Liro 1938

**TILLETIA AIRAE** Blytt Forhdl. Vid.-Selsk. Christiania 1896: 31.*Tilletia cerebrina* Ell. and Ev., Jour. Mycol. 3: 56. 1887.

## LIFE HISTORY, PARASITISM AND FACTORS AFFECTING

1724 Liro 1938

## SPORE GERMINATION AND FACTORS AFFECTING

796 Fischer and Hirschhorn 1945

**TILLETIA ASPERIFOLIA** Ell. and Ev. Jour. Mycol. 3: 55. 1887.

## CULTURE ON ARTIFICIAL MEDIA

3095 Vanterpool 1932

## SPORE GERMINATION AND FACTORS AFFECTING

3095 Vanterpool 1932

**TILLETIA BALDRATI** Martemartini Bol. Studi Inform. R. Giard.

Col a. Polermo 13 (ser. 3, vol. 7): 44-46. 1934.

## MISCELLANEOUS

Incidence in Italian E. Africa and comparison with other *Tilletia* spp. on *Eragrostis* 427 Castellani and Ciccarone 1939**TILLETIA BUCHLOËANA** Kell. and Sw. Jour. Mycol. 5: 11-12. 1889.

## MISCELLANEOUS

Symptoms and morphology 1445 Kellerman and Swingle 1889

## SPORE GERMINATION AND FACTORS AFFECTING

2159 Norton 1896

**TILLETIA CARIES** (DC.) Tul. Ann. Sci. Nat. Bot. III, 7: 113. 1847.*Lycoperdon tritici* Bjer., Kgl. Schmd. Akad. Wiss. Abhandl. 37: 326. 1775. (nom. nud.)*Uredo caries* DC., Fl. France 6: 78. 1815.*Caeoma segetum* Nees, Syst. Pilze 1: 14. 1817.*Uredo sitophila* Ditmer, Sturm's Deutschl. Fl. 1: 69. 1817.*Uredo foetida* Bauer, Ann. Sci. Nat. Bot. I, 2: 167. 1824.*Caeoma sitophilum* Link, Willdenow in Sp. Pl. 6: 2. 1825.*Erysibe foetida* Wallr., Fl. Crypt. Germ. 2: 213. 1833.*Uredo secalis* Corda, in Hlubek, Oekon., Neuigk. und Verh. 1: 10. 1848.*Ustilago sitophila* Bonorden, Kennt. Con. Crypt. 27. 1860.*Tilletia secalis* Kühn, Deutsche Landw. Ztg. 19: 650. 1876 and Bot. Ztg. 34: 470. 1876.*Tilletia tritici* Wint., in Rabenh., Krypt. Fl. 1: 110. 1881.*Tilletia separata* Massee, Kew Bull., Miscellaneous Information 153-154: 150. 1899. p.p.

## CONTROL

2706 Schulthess 1761

374 Bryant 1783 (discredits seed treatment practices)

1471 Kirby 1799 (early control experiments)

- 2366 Prevost 1807 (Keitt 1939) (first demonstration and recommendation of use of copper salts for control)  
2645 Sandri 1847  
1557 Kühn 1859  
2126 Nielsen 1873  
2127, 2128 Nielsen 1877  
94 Arthur 1889  
1448 Kellerman and Swingle 1890  
2315 Piper 1894  
263 Bolley 1897  
264 Bolley 1899  
266 Bolley 1900  
2168 Oemichen 1900  
1268 Hori 1901  
3047, 3048 Tubeuf 1901  
169 Beattie 1902  
1729 Ljubanski 1902  
1755 McAlpine 1902  
3049, 3050, 3051 Tubeuf 1902  
1473, 1474, 1475 Kirschner 1903  
112 Augustin 1905  
1637 Lawrence 1907  
2892 Sutton and Pridham 1907 (effect on wheat germination)  
2043 Müller 1909  
2300 Piardi 1909  
2891 Sutton and Downing 1910  
1290 Humphrey 1912  
1689 Lind 1913 (early history)  
2487 Riehm 1913  
416 Cardiff *et al.* 1914  
3249 Woolman 1914  
59 Appel 1915  
1114 Heald and Woolman 1915  
2386 Quanjer and Botjes 1915  
1901 Melchers 1916  
3260 Woolman 1916  
1101, 1102 Heald 1918  
1143 Henning 1919  
3337 Zundel 1919  
525 Coons 1920  
1185 Hiltner 1920  
3301 Zade 1920  
586 Darnell-Smith 1921  
1786 Mackie and Briggs 1921  
2597 Salmon and Wormald 1921  
289 Bouillard 1922  
526 Coons 1922

- 708 Eriksson 1922  
1113 Heald and Smith 1922  
1144 Henning 1922  
1187 Hiltner and Lang 1922 (fertilize with calcium cyanimide)  
1608 Lambert and Bailey 1922  
2000 Morettini 1922 (influence of copper compounds on productivity of wheat)  
2307 Pichler and Wober 1922 (use of ultra-violet and X-rays and radium)  
2598 Salmon and Wormald 1922  
2645 Schaffnit 1922  
2839 Stephens and Woolman 1922  
341 Briggs 1923  
397 Burk 1923  
527 Coons 1923  
680 Dreger 1923  
847 Fraser and Simmonds 1923  
907 Gassner 1923  
920 Gassner and Esdorn 1923  
1116 Heald, Zundel and Boyle 1923  
1787 Mackie and Briggs 1923  
2040 Müller *et al.* 1923  
2095 Neill 1923  
2479 Remy and Vasters 1923  
2602 Sampson 1923  
2642 Schafer 1923  
2816 Stakman and Lambert 1923  
530 Coons 1924  
587 Darnell-Smith 1924  
710 Esdorn 1924  
713 Esmarch 1924  
759 Ferdinandsen 1924  
775 Fischer 1924  
848 Fraser and Simmonds 1924  
900 Garbowski and Leszczanko 1924  
908 Gassner 1924  
1773 McKillican 1924  
2041 Müller *et al.* 1924  
2382 Puttick 1924  
2599 Salmon and Wormald 1924  
3112 Vermorel 1924  
3140 Vogt 1924  
3263 Woolman and Humphrey 1924  
3264 Woolman and Humphrey 1924 (history of control by seed treatment)  
123 Bailly 1925  
144 Barss 1925



- 166 Baunacke 1925  
714 Esmarch 1925  
625 Dellazoppa 1925  
854 Friedrichs 1925  
910 Gassner 1925  
1229 Hollrung 1925  
2045 Mullet 1925  
2081 Nagel 1925  
2099, 2100 Neill 1925  
2324 Plaut 1925  
2494, 2496 Riehm 1925  
3113 Vermorel 1925  
268 Bolley 1926  
342 Briggs 1926  
889 Galkoff 1926  
926 Gassner and Rabien 1926  
1168 Hilgendorff 1926  
1418 Jorstad and Christie 1926  
1659 Leukel 1926  
1920 Mencacci 1926  
2044 Müller 1926  
2088 Natrass 1926  
2101 Neill 1926  
2295 Pfeil 1926  
2505 Rivera 1926 (X-ray treatment ineffective)  
2540 Rohweder 1926  
2612 Sampson and Davies 1926  
2646 Schaffnit 1926  
3206 Westermuir 1926  
122 Bailey 1927  
391 Buddin 1927  
703 Englisch 1927  
715 Esmarch 1927  
913, 914 Gassner 1927  
970 Gram 1927  
1108 Heald 1927  
1222, 1223 Hoffmann 1927  
1359 Jefferis 1927  
1687 Limbourn and Throssell 1927  
1978 Molz 1927 (a history of dusting for control)  
2046 Müller 1927  
2082 Nagel 1927  
2102 Neill 1927  
2263 Petit 1927  
2500 Riehm 1927  
2957 Terenyi 1927  
3142, 3143 Volk 1927

- 276 Borghardt 1928  
515 Conners 1928  
712 Esdorn 1928  
831, 832 Florimond-Desprez 1928  
901 Garbowski and Leszczanko 1928  
971 Gram 1928  
1012 Guyot 1928  
2133, 2134 Niethammer 1928  
2264, 2265, 2266, 2267 Petit 1928  
2866 Straib 1928  
516 Conners 1929  
653 Dillon-Weston 1929  
972, 973 Gram 1929  
1224 Hoffmann 1929  
1470 Kirby 1929 (relation of smut ball removed)  
2008 Morris and Kurtz 1929  
3144 Volk 1929  
1660 Leukel 1929  
9 Abramoff 1930  
83, 84 Arnaud and Gaudineau 1930  
657 Dillon-Weston 1930  
1110 Heald and Gaines 1930  
1187 Hiltner and Tornow 1930  
1419 Jorstad and Traaen 1930  
1536 Krauss 1930  
1554 Kuhl 1930  
2270, 2271 Petit 1930  
2292 Petri 1930  
10 Abramoff 1931  
857 Friedrichs 1931  
974 Gram 1931  
1052 Hanna and Popp 1931  
1087 Haskell *et al.* 1931  
2272, 2273, 2274, 2275, 2277 Petit 1931  
3061 Twentyman 1931  
86, 87 Arnaud and Gaudineau 1932  
253 Bodnar and Terenyi 1932  
278 Borghardt 1932  
678 Dounine and Simsky 1932  
1532 Krause 1932  
2302 Pichler 1932  
254 Bodnar and Terenyi 1933  
691 Eckhoff 1933  
2279 Petit 1933  
929 Gaudineau 1934  
1156, 1157 Hermann and Neiger 1934  
1704 Lindfors 1934

- 2105, 2106, 2107, 2108 Neill 1934  
 255 Bodnar *et al.* 1935  
 625 Dellazoppa 1935  
 661 Dillon Weston and Boer 1935  
 1657 Leszczenko 1935  
 2018 Morwood 1935  
 2114, 2115 Nemlienko 1935 (vernalization process unfavorable  
 for bunt infection)  
 2256 Perevesentzeva 1935  
 2281, 2283 Petit 1935  
 2303, 2304 Pichler 1935  
 626 Denaiffe, Colle and Flandrin 1936  
 1252 Holton and Heald 1936  
 2618 Sandu-Ville 1936  
 1667 Leukel 1937  
 2208 Palmiter and Keitt 1937  
 2794 Sprague *et al.* 1937  
 777 Fischer *et al.* 1938  
 1275 Houdayer 1938  
 1866 Martin 1938  
 1867 Martin and Sprague 1938 (no differences in response of  
 various races to seed treatment)  
 2092 Natrass 1938  
 283 Borzini and Bettolo 1939  
 1672 Leukel and Nelson 1939  
 2290 Petit 1939  
 2793 Sprague 1939  
 2030 Mourashkinsky 1940  
 1253 Holton and Heald 1941 (exhaustive review)  
 324 Bremer 1943  
 1353 Jamalainen 1943  
 81 Arnaud 1944  
 2632 Savulescu and Hulea 1944  
 1626 Lansade 1945  
 3283 Yersin *et al.* 1945  
 191 Benlloch 1946  
 2408 Rapin 1946  
 2582 Russell 1946 (centrifuge testing of seed to see if contain  
 enough spores to warrant treating)  
 404 Buttress and Dennis 1947 (early history of cereal seed  
 treatment)  
 2756 Simmonds 1948 (use of oil to counteract dust nuisance of  
 fungicides)
- CULTURE ON ARTIFICIAL MEDIA
- 311 Brefeld 1883  
 2621 Sartoris 1924  
 286 Boss 1927

- 1461 Kienholz and Heald 1930
- 393 Buller 1933
- 829 Flor 1933
- 180 Becker 1936
- 623 Defago 1938
- 1621 Lange-de la Camp 1939
- 1433 Keil 1940
- 1245 Holton 1941
- 1253 Holton and Heald 1941
- 1286 Hulea 1947 (including *Tilletia triticoides* and *T. intermedia*)

## CYTOLOGY

- 771 Fisch 1885
- 579 Dangeard 1892
- 762 Ferry 1895
- 1840 Maire 1902
- 2415 Rawitscher 1914
- 2231 Paravicini 1917
- 590 Dastur 1921
- 2416 Rawitscher 1922
- 3261 Woolman 1923
- 286 Boss 1927
- 1460 Kharbush 1928
- 393 Buller 1933
- 1043 Hanna 1934
- 3179 Wang 1934
- 1239 Holton 1935
- 462 Churchward 1940
- 1253 Holton and Heald 1941

## HETEROTHALLISM AND SEX

- 196 Berkeley 1847 (sporidial fusions)
- 579 Dangeard 1892 (sporidial fusions)
- 2415 Rawitscher 1914
- 2231 Paravicini 1917
- 825 Flor 1931
- 826 Flor 1932
- 1043 Hanna 1934
- 180 Becker 1936
- 1245 Holton 1941 (of cultures from dwarf bunt)
- 1253 Holton and Heald 1941
- 1286 Hulea 1947 (including *Tilletia "triticoides"* and *Tilletia "intermedia"*)

## HOST RANGE

- 3106 Vavilov 1918 (*Aegilops* spp.)
- 887 Gaines and Stevenson 1922 (incidence in wheat-rye hybrids)
- 888 Gaines and Stevenson 1923 (incidence in rye)

- 683 Ducomet 1927 (artificial infection of rye)
- 331 Bressman 1931 (rye infected)
- 334 Bressman 1932 (Lolium infected)
- 2473 Reichert 1931 (*Aegilops ventricosa*)
- 928 Gaudineau 1932 (*Aegilops ventricosa*)
- 2143 Nieves 1935 (infection of rye)
- 778 Fischer 1936 (*Agropyron* and *Hordeum* spp.)
- 1724 Liro 1938
- 782 Fischer 1939 (new grass hosts, *Agropyron* and *Sitanion* spp.)
- 18 Ajroldi 1940 (rye not susceptible under Italian conditions)
- 1253 Holton and Heald 1941
- 2474 Reichert 1944 (three vars. wild emmer, *Triticum dicoccoides*, highly susceptible)

## HYBRIDIZATION AND GENETICS

- 825 Flor 1931 (with *Tilletia foetida*)
- 826 Flor 1932 (with *Tilletia foetida*)
- 181 Becker 1936 (with *Tilletia foetida*)
- 1043 Hanna 1934
- 917 Gassner 1938 (natural hybridization with *Tilletia foetida*)
- 1243 Holton 1938 (with *Tilletia foetida*)
- 1245 Holton 1941 (between dwarf bunt and *Tilletia caries* and *Tilletia foetida*)
- 1253 Holton and Heald 1941
- 1247 Holton 1942 (pathogenicity of hybrids with *Tilletia foetida*)
- 1246 Holton 1942 (transgressive inheritance)
- 1249 Holton 1944 (chlamydospore and sorus characters in interspecies and interracial hybrids with *Tilletia foetida*)
- 1250 Holton 1947 (with *Tilletia foetida*)

## LIFE HISTORY, PARASITISM AND FACTORS AFFECTING

- 3058 Tull 1733
- 2995 Tillet 1755
- 374 Bryant 1783
- 2963 Tessier 1783
- 2964 Tessier 1786
- 1471 Kirby 1799
- 2366 Prevost 1807 (Keitt 1939)
- 2615 Sandri 1847
- 196 Berkeley 1847
- 3056 Tulasne and Tulasne 1847
- 2477 Reissek 1852
- 1557 Kühn 1859
- 1023 Hallier 1867
- 803 Fischer v. Waldheim 1869
- 1562 Kühn 1874
- 1567 Kühn 1874

- 311 Brefeld 1883  
2992 Von Thümen 1888  
94 Arthur 1889  
1448 Kellerman and Swingle 1890  
2315 Piper 1894  
3047, 3048 Tubeuf 1901  
990 Grenfell 1901  
1729 Ljubanski 1902  
3049, 3050, 3051 Tubeuf 1902  
761 Ferle 1905  
3146, 3147 Volkart 1906  
62 Appel and Gassner 1907  
1850 Malkoff 1907  
1477 Kirchner 1908  
1126 Hecke 1909  
2836 Steglich 1909–11  
1763 McAlpine 1910  
2069 Munerati 1911  
321 Brefeld 1912  
2070 Munerati 1912  
2039 Müller *et al.* 1913  
71 Appel and Riehm 1914 (spores overwintered in soil not  
viable in spring)  
2032, 2034 Müller and Molz 1914  
3259 Woolman 1914  
59 Appel 1915  
1114 Heald and Woolman 1915  
1100 Heald 1916  
1479, 1480 Kirchner 1916  
1617 Lang 1917  
1101, 1102 Heald 1918  
1111 Heald and George 1918  
2869 Strampelli 1919  
1185 Hiltner 1920  
1301 Hungerford and Wade 1920  
590 Dastur 1921  
1163 Heuser 1922  
1186 Hiltner and Lang 1922  
1296 Hungerford 1922  
2071 Munerati 1922  
907 Gassner 1923  
1392 Johnston 1923  
2072 Munerati 1923  
729 Faris 1924  
946, 947 Gibs 1924  
1127 Hecke 1924  
1936 Milan 1924

- 2621 Sartoris 1924  
3263 Woolman and Humphrey 1924 (historical review)  
3264 Woolman and Humphrey 1924  
910 Gassner 1925  
1019 Hahne 1925  
2024 Mourashkinsky 1925  
2099 Neill 1925  
2164 Novopokrovsky and Skaskin 1925  
46 Antonoff 1926  
424 Caspar 1926  
3206 Westermeier 1926  
40 Andreyeff 1927  
1937 Milan 1927 (artificial infection of maturing wheat)  
2390 Rabien 1927  
2407 Rapin 1927  
2613 Sampson and Davies 1927  
2865 Straib 1927  
41 Andreyeff 1928  
1496 Klushnikova 1928  
1655 Leszczenko 1928  
1938 Milan 1928  
2031 Mouravieff 1928  
2474 Reichert 1928  
768 Finnell 1929  
950 Gieseke 1929  
1504 Knorr 1929  
9 Abramoff 1930  
1110 Heald and Gaines 1930  
3130 Vilkaitis 1930  
3262 Woolman 1930  
272 Bonne 1931  
1941 Milan 1931  
3061 Twentyman 1931  
86 Arnaud and Gaudineau 1932  
659 Dillon Weston 1932  
665, 666 Djelaloff 1932  
764 Feucht 1932  
828 Flor 1932  
928 Gaudineau 1932  
2028 Mourashkinsky 1932  
2774 Smith 1932  
3121 Viennot-Bourgin 1932  
393 Buller 1933  
669 Dobromysloff 1933  
829 Flor 1933  
932 Geach 1933 (combined action with *Fusarium culmorum* on occurrence of seedling blight)

- 1945 Milan 1933  
2535 Roemer and Bartholly 1933  
3132 Vilkaitis 1933  
    922 Gassner and Kirchoff 1934  
    929 Gaudineau 1934  
1043 Hanna 1934  
1057 Hanna and Popp 1934  
2029 Mourashkinsky 1934  
3133 Vilkaitis 1934  
    386, 387 Buchheim 1935  
    625 Dellazoppa 1935  
    834 Fomin 1935  
2115 Nemlienko 1935  
2175 Olgyay 1935  
1044 Hanna 1936 (effect of vernalization on incidence)  
1946 Milan 1936  
2590 Ryzhkova 1936  
    17 Ajroldi 1937  
    550 Crepin *et al.* 1937  
1667 Leukel 1937  
3126 Viennot-Bourgin 1937  
3151 Voss 1937  
    623 Defago 1938  
    917, 1918, 919 Gassner 1938  
1632 Lasser 1938  
1866 Martin 1938  
2723, 2724, 2725 Sempio 1938  
2834 Starr 1938  
    782 Fischer 1939 (perennation in perennial hosts)  
    816 Fittschen 1939  
1621 Lange-de la Camp 1939  
1629 Larose and Vanderwalle 1939  
2793 Sprague 1939  
3170 Walstedt 1939  
    18 Ajroldi 1940  
    462 Churchward 1940  
1071 Hanson and Tervet 1940  
1493 Klemm 1940  
2529 Rodenhiser and Taylor 1940  
1253 Holton and Heald 1941  
2521 Rodenhiser and Holton 1942  
2530 Rodenhiser and Taylor 1943  
2632 Savulescu and Hulea 1944 (including *Tilletia triticoides*  
    and *T. intermedia*)  
1068 Hansen 1946  
1550 Kristev 1946  
    134 Bamberg *et al.* 1947



1250 Holton 1947

1286 Hulea 1947 (including *Tilletia triticoides* and *T. intermedia*)

#### LONGEVITY OF SPORES

3263, 3264 Woolman and Humphrey 1924

2390 Rabien 1927

1004 Guest 1929

2162 Novak 1929

1056 Hanna and Popp 1933

2175 Olgyay 1935

779 Fischer 1936

1737 Lobik and Dahlstrem 1936

18 Ajroldi 1940

1253 Holton and Heald 1941

#### MISCELLANEOUS RECORDS

*Are the spores toxic to man and animals?*

Toxicity of spores 862 Fries 1823

Toxicity of spores 1568 Kühn 1875

Spores toxic 2127, 2128 Nielsen 1877

Smutty wheat hay toxic to cattle 2187 Oppermann 1879

Toxicity of spores 2379 Pusch 1893

Smutty wheat is toxic to cattle, sheep, hogs and horses 3046 Tubeuf 1897

Toxicity of spores 1075 Hartig 1900

Toxicity of spores 864 Frohner 1901

Toxicity of spores 3051 Tubeuf 1902

Toxicity of spores 1006 Güssow 1907

Medicinal properties 727 Faminzin 1910

Smutty wheat is poisonous to humans and cattle 1763 McAlpine 1910

Smutty wheat caused enormous drop in egg production in domestic fowl 1763 McAlpine 1910

Toxicity of spores 1763 McAlpine 1910

Toxicity of spores 1690 Lind 1913

Destruction of digestive organs of animals 1726 Liskum and Krastavitsky 1914

Toxicity of spores 1311 Huss 1915

Cause of epileptiform convulsions and other effects in dogs 988 Greig 1924

Toxic effects of bunt-contaminated wheat bran on sheep and pigs 3189 Weiser 1926

Effect of smut spores on the digestibility of milling bran 2893 Svoboda 1928

Spores uninjurious 20 Albrecht 1896

No impairment of flour quality from smutty wheat 742 Farrer 1902

Spores uninjurious 3049, 3050 Tubeuf 1902

*Are the spores toxic to man and animals?—(cont.)*

Spores uninjurious 1261 Honcamp *et al.* 1910

Spores non-toxic 1260 Honcamp 1911

Daily diet of smut for three months not injurious 2659 Scheuhert and Lötsch 1911

Seed heavily contaminated with spores not injurious as feed to livestock 2380 Pusch 1912

Spores non-injurious to animals and man 160 Baudyš 1915

Spores not injurious 1311 Huss 1915

Spores not poisonous to poultry, mice, rabbits and author 162 Baudyš 1921

Spores conclusively shown to be non-toxic to dogs, rabbits, guinea pigs and fowl Spores not viable after passage through alimentary tract 670 Dobson 1926

*Influence of external factors*

Effect of temperature and soil on development 2407 Rapin 1927

Effect of fertilizers 764 Feucht 1932

Higher incidence of infection following peas than wheat 764 Feucht 1932

Vernalization process unfavorable for bunt infection 2115 Nemlienko 1935

Freezing injury more severe in certain varieties of wheat infected with bunt 2672 Schlehuber 1937

Adverse effects of vernalization 3336 Zuhr 1937

Influence of light and vernalization on infection 1632 Lasser 1938

Effect of nutrition of host plant on development of bunt 2723 Sempio 1938

Effect of high temperature up to boot stage on development of bunt 2724 Sempio 1938

Effect of purification of collections on percentage infection 212 Bever 1939

Vernalized seed gives high rate of infection 2030 Mourashkinsky 1940

Effect of fertilizers on development 1071 Hanson and Tervet 1940

Influence of soil type, sterilization and pH on extent of infection at different incubation temperatures 2528, 2529 Rodenhiser and Taylor 1940

Fall sowing necessary to dwarf bunt infection 133 Bamberg 1941

Breakdown of resistance when host grown under continuous light 2530 Rodenhiser and Taylor 1943

Effect of photoperiodism on bunt development 2530 Rodenhiser and Taylor 1943

*Interaction with other parasites*

Nematodes and bunt in same kernels 1840 Maire 1902

Smut-infected plants more susceptible to rusts 3110 Verhoeven 1902

- Relationship of incidence of stripe rust and bunt 652 Dillon Weston 1927
- Bunted plants more susceptible to *Puccinia glumarum* 656 Dillon Weston 1929
- Simultaneous incidence with *Tilletia foetida* on same plant 2772 Smith 1929
- Increased susceptibility to *Puccinia glumarum* 3130 Vilkaitis 1930
- Competition with *Ustilago tritici* on same plant 2073 Munerati 1931
- Ustilago tritici* suppresses when both in same host plant 2073 Munerati 1931
- Bunt-infected plants more susceptible to stripe rust 3131 Vilkaitis 1931
- Bunted plants more susceptible to stripe rust 3145 Volk 1931
- Competition and simultaneous occurrence with *Ustilago tritici* and ergot 1041 Hanna 1932
- Infected plants more susceptible to *Puccinia glumarum* 3121 Viennot-Bourgin 1932
- Ustilago tritici* suppresses *Tilletia caries* when both in same host plant 1946 Milan 1936
- Bunt and ergot (*Claviceps purpurea*) in same caryopsis 1046 Hanna 1938
- Competition between *Tilletia caries* and *Ustilago tritici* results in suppression of the bunt 1046 Hanna 1938
- Simultaneous occurrence with *Ustilago tritici* and ergot 1046 Hanna 1938
- Antagonism between *Erysiphe graminis* and *Tilletia caries* 2725 Sempio 1938
- Bunt infection has no effect on reaction of truly resistant varieties to stripe rust 2867 Straib 1938
- Fusarial head blight depresses when in same plant 1068 Hanson 1946
- Predisposes infected plants to seedling blight 1069 Hanson 1946
- Suppresses dwarf bunt when in the same plant 134 Bamberg *et al.* 1947
- Screening effects, "build-up," etc.*
- Increase of strain of smut on same wheat variety increases virulence of strain 2026 Mourashkinsky 1928
- Passage of one strain through same variety of wheat for five years greatly increased virulence to that host 2027 Mourashkinsky 1932
- Screening effect of differential host varieties on mixtures of races 829 Flor 1933
- Build-up of virulence by repeated culture on same host variety 2535 Roemer and Bartholly 1933

*Screening effects, "build-up," etc.—(cont.)*

Selective action of wheat varieties on (= screening action) smut mixtures 2399 Radulescu 1938

No build-up of susceptibility when resistant varieties inoculated repeatedly with their own smut 212 Bever 1939

Selective action of host and parasite on each other during 10 years culturing on same hosts 2534 Roemer 1939

No build-up of virulence when cultured repeatedly on same host 2716 Selaries 1939

*Secondary effects on hosts*

Effect on wheat quality 1471 Kirby 1799

Peculiar effect on *Triticum spelta* 2189 Orth 1880

Infected plants noticeably shorter than those infected with *Tilletia foetida* 1076 Harwood 1892

Secondary changes induced in host 694 Edler 1903

Secondary changes induced in host 50 Appel 1906

Ancestral reversion of *Triticum compactum* to *T. vulgare* caused by *Tilletia caries* 1933 Miczynski 1911

Secondary changes induced in host 2792 Sperling 1912

Infected club wheats produce slender heads 1114 Heald and Woolman 1915

Pathological morphology 139 Barrus 1916

Stunting of host 1617 Lang 1917

Number of kernels on smutted spikes greater than on normal 1425 Kajanus 1923

Morphological responses of wheat to bunt infection 2024 Mourashkinsky 1925

Influence on growth and morphology of host 2613 Sampson and Davies 1927

Effect of bunt on development of wheat spike 655 Dillon Weston 1929

Morphological changes induced by infection 3130 Vilkaitis 1930

Morphological alterations of bunted wheat heads 1941 Milan 1931

Culm length in wheat reduced 2514 Rodenhiser 1931

Branching in smutted heads of Minard wheat 335 Bressman 1932

Produces shorter infected plants than does *Tilletia foetida* 336 Bressman 1932

Both slender and thick types of smut balls produced by both *Tilletia caries* and *T. foetida* 764 Feucht 1932

Morphological reactions of plants to infection 3121 Viennot-Bourgin 1932

More caryopses on bunted heads than on healthy ones 1945 Milan 1933

Severely affected plants tiller less than healthy ones 1945 Milan 1933

Morphological changes in host 2146 Nilsson 1933

Recognition of infected plants by distortion of seedling 42 Angell 1934

Lesions on seedlings 460 Churchward 1934

Wheat plants containing mycelium more sensitive to light but less sensitive to gravity 1979 Montemartini 1935

Effect of infection on morphology of wheat plants 7 Aamodt *et al.* 1936

Effect of bunt on host varies with the variety 2672 Schlehuder 1937

Pathological changes induced in the host 3126 Viennot-Bourgin 1937

Effect of bunt infection on root development 1136 Hely, Allan and Angell 1938

Effect of different physiologic races on host plant and morphology of smut balls 816 Fittschen 1939

Review of literature on morphologic responses of host 1253 Holton and Heald 1941

Morphological changes induced in the host 2347 Potapov *et al.* 1943

*Spore load of seed and its significance*

Quantitative determination of spore load of wheat 493 Cobb 1904  
By methods of determination of number of smut spores, a minimum number is established at which it is safe to eliminate seed treatment 495 Cobb 1905

Quantitative determination of spore load of wheat 307 Brede-  
mann 1911

Quantitative determination of spore load of wheat seed 1001  
Groh 1913

Quantitative determination of spore load of wheat 307 Brede-  
mann 1915

Relation of spore load to per cent of smut 1104, 1105 Heald 1921

Modification of importance of relation of spore load to per cent  
smut in crop 2071 Munerati 1922

Quantitative determination of percentage of spores in flour sam-  
ples 309 Bredemann 1923

Quantitative determination of spore load of wheat 309 Brede-  
mann 1923

Relation of spore load to per cent smut 1109 Heald and Boyle 1923

Number of spores per grain as an index to severity of attack 384  
Buchheim 1926

Quantitative determination of spore load of wheat seed 1733  
Lobik 1927

Determination of number of spores in grain samples 933 Gentner 1929

*Spore load of seed and its significance—(cont.)*

- Number of spores per bunt ball; 450,000 spores weigh .001 grams  
370 Brückner 1935
- Improved method of detecting bunt spores in seed wheat 2595  
Safronova 1936
- 141,000,000 spores per gram or 1,462,170 per smut ball in mixed  
sample from one district and 174,000,000 per gram and 2,041,-  
020 per ball from another district 2347 Potapov *et al.* 1943
- Improved method for determining spore load as indication of need  
for seed treatment 431 Cherewick 1944
- Spore load as indication of need for seed treatment 432, 433  
Cherewick 1947 and 1948

*Miscellaneous unclassified*

- Chemical composition of smutty wheat 839 Fourcroy 1810
- Bromus secalinus*, *Hordeum murinum* and other grasses not sus-  
ceptible 1566 Kühn 1875
- Relationship to *Tilletia* spp. on grasses 1566 Kühn 1875
- Development of chlamydospores in culture 311 Brefeld 1883
- Historical account 94 Arthur 1889
- Spores much less viable after passing through digestive tract of  
domestic animals 3047 Tubeuf 1901
- Bunt spores killed in passage through alimentary tract of horses or  
cattle 3050 Tubeuf 1902
- Detection of spores in hay and fodder 1549 Krenz 1908
- 12,125,000 spores per spore ball 392 Buller 1909
- Spores much less viable after passing through digestive tract of  
domestic animals 1261 Honcamp *et al.* 1910
- Spores lose viability after passage through digestive tract of cattle  
70 Appel and Riehm 1911
- Chemistry of spore contents 3322, 3323 Zellner 1911
- Chemistry of the spores 3324 Zellner 1912
- Spores overwintered in soil not viable in spring 72 Appel and  
Riehm 1914
- Fires in threshing separators due to spontaneous combustion of  
spores 416 Cardiff *et al.* 1914
- Accounts and illustrations of explosions and fires in grain separa-  
tors due to bunt 2367 Price and McCormick 1916
- Wind dissemination of spores 1111 Heald and George 1918
- Comparison with *Tilletia foetida* re symptoms and morphology  
2351, 2352 Potter and Coons 1918
- Effect of formaldehyde on wheat seed 128 Bakke and Plagge  
1919
- Spores found in human feces 372 Bruntz 1919
- Effect of control measures on germination of seed 3340 Zundel  
1921
- Effect of formaldehyde on wheat 111 Atwood 1922
- Effect of ultra-violet and X-rays and radium on spore germina-  
tion 2307 Pichler and Wober 1922

- Caused by wind-borne spores in Oregon 2839 Stephens and Woolman 1922
- Comparative (with *Tilletia foetida*) incidence in Oregon 2839 Stephens and Woolman 1922
- No correlation between H-ion concentration and resistance or susceptibility 1303 Hurd 1923
- Combined control with loose smut 2040 Müller *et al.* 1923
- Effect of formaldehyde on seed wheat 125 Baker 1924
- Development of chlamydospores in culture 2621 Sartoris 1924
- Literature review and history, 500 B.C. to 1924 3264 Woolman and Humphrey 1924
- Factors contributing to recent severity in Turkestan 3314 Zaprometoff 1924
- Biochemistry of the action of fungicides on the spores 249 Bodnar and Terenyi 1925
- Violent discharge of sporidia 394 Buller and Vanterpool 1925
- Favorable and adverse effects of seed treatment substances on germination of wheat seed. Some stimulatory 2726 Senf 1925
- Comparative (with *Tilletia foetida*) incidence in European Russia 2751 Sigriansky 1925
- Stimulatory action of certain fungicides on wheat 228 Bittera 1926
- Biochemistry of the action of fungicides on the spores 249, 250, 251, 252, 253, 254 Bodnar and Terenyi 1926-1933
- Copper carbonate treated seed not bothered by mice 1728 Mackie and Briggs 1926
- Partial infection of individual grain 2750 Sieling 1926
- No correlation between thickness of pericarp and rate of germination and susceptibility to formalin injury 3325 Zeuschner 1926
- Partial infection 3327 Ziling 1926
- Chlamydospores (haploid) in culture 286 Boss 1927
- Artificial infection of maturing wheat 1937 Milan 1927
- Widely distributed in Ireland 2079 Murphy 1927
- Comparative distribution of *Tilletia caries* and *T. foetida* in U. S. 3012 Tisdale *et al.* 1927
- More important on spring wheat in North Caucasus 41 Andreyeff 1928
- Infection of wheat plants by application of spores to wounds at base of plants 1938 Milan 1928
- Wheat can become infected with bunt when spores are present in tissues at base of culms during growing period 1938 Milan 1928
- Effect of source of origin of inoculum on susceptibility 2026 Mourashkinsky 1928
- Incidence in Bulgaria 106 Atanasoff 1929
- Method of washing wheat free of smut 147 Bates *et al.* 1929
- Effect of soil type and reaction on efficacy of fungicidal dusts 3144 Volk 1929

*Miscellaneous unclassified—(cont.)*

- Effect of ultra-violet radiation on spores 662 Dillon Weston and Halnan 1930
- Only *Tilletia caries* on durum wheats 1049 Hanna and Popp 1930
- Prevalence in western Canada 1049 Hanna and Popp 1930
- Increasing prevalence in U. S. 1086 Haskell *et al.* 1930
- Inoculations with pure cultures gave negative results 1461 Kienholz and Heald 1930
- Not practical to separate physiologic forms on constant cultural characters 1461 Kienholz and Heald 1930
- Bunt collections sent to other countries are less virulent, and reasons for 2471 Reichert 1930
- Change from gram-negative to gram-positive in early stages of infection 3262 Woolman 1930
- Fungus enters epidermis of both resistant and susceptible seedlings with equal facility 3262 Woolman 1930
- Tilletia secalis* considered a form of *T. caries* 331 Bressman 1931
- Dangers involved in forwarding collections of smut from one country to another 658 Dillon Weston 1931
- Traces of bunt on resistant varieties due to mixture of forms in inoculum? 658 Dillon Weston 1931
- Relation of pH and osmotic pressure to resistance 951 Giljarovskij and Zak 1931
- Superior resistance of durum varieties presumably attributable to the higher pH value of cell sap and higher osmotic pressure 951 Giljarovskij and Zak 1931
- Correlation between amount of infection in field and official grading for smut in the threshed grain 1082, 1083 Haskell and Boerner 1931
- Durum wheats more susceptible than hard red ones 1083 Haskell and Boerner 1931
- Epiphytotic due to development of new forms 1234 Holton 1931
- No hereditary acquired immunity developed from seed selected from partially smutted or smut-free individuals in a lot of smutted plants 2276 Petit 1931
- Immune varieties should be treated because of possibility of latent infection 3304 Zade 1931
- Latent infection can cause considerable reduction in stand of "immune" varieties 3304 Zade 1931
- Relation of "stimulatory" action of certain fungicides to latent infection 3304 Zade 1931
- Case of smut-docked wheat being caused by heavy contamination with spores of *Ustilago utriculosa* from *Polygonum* growing in field 5 Aamodt and Malloch 1932
- Adsorption of mercury salts by the chlamydospores 253 Bodnar and Terenyi 1932
- Chemical composition of the spores 412 Campanile 1932
- Chemistry of the spores 412 Campanile 1932



- Susceptibility of rye, and use as differential host 659 Dillon Weston 1932
- Relation of ridged versus flat rows as influencing degree of infection 669 Dobromysloff 1932
- Relation of time of planting to efficacy of copper carbonate dust for control 827 Flor 1932
- Production of chlamydospores in vegetative parts of secondary shoots from plants that had not previously shown smut 828 Flor 1932
- Effect on yield of wheat 830 Flor *et al.* 1932
- Inoculum from different sources gives different results 928 Gaudineau 1932
- Cause of odor of the spores and genetic dominance of same 1042 Hanna 1932
- Trimethylamine isolated, as cause of foetid odor of bunt 1060 Hanna *et al.* 1932
- High percentage of infection resulting from wound inoculations 1942 Milan 1932
- Count of infected plants does not give true representation of actual loss 2028 Mourashkinsky 1932
- Effect of source of origin on susceptibility 2027 Mourashkinsky 1932
- Transfer of smut immunity to hard red spring wheat 2769 Smith 1932
- Effect of fall versus spring planting on resistance in Hope wheat 2769 Smith 1932
- Latent infection in Martin wheat 2773 Smith 1932
- Injurious effects of latent infection 3305 Zade 1932
- Development of chlamydospores in culture 393 Buller 1933
- Violent discharge of sporidia 393 Buller 1933
- Overwintering of spores in western Canada 1056 Hanna and Popp 1933
- Morphological and pathogenic difference between two races 1237 Holton 1933
- Comparative (with *Tilletia foetida*) prevalence and distribution in Argentina 2145 Nieves *et al.* 1933
- Method for germinating spores 3098 Vassilievsky 1933
- Exposure of spore-contaminated wheat seed to dry heat does not reduce number of smutted plants 3132 Vilkaitis 1933
- Prolonged exposure to sub-zero temperatures no adverse effects on spores 3132 Vilkaitis 1933
- Comparative (with *Tilletia foetida*) incidence in Romania 2617 Sandu-Ville 1934
- Biochemistry of the action of fungicides on the spores 255 Bodnar and Terenyi 1935
- Morphological and cytological differences between two races 1239 Holton 1935
- Removing smut balls from seed wheat 1310 Hurst *et al.* 1935

*Miscellaneous unclassified—(cont.)*

- Comparison with *Tilletia foetida* and *T. indica* 1963 Mitra 1935  
 Possible explanations for increase of wheat bunt in Germany in spite of seed treatment 3236 Winkleman 1935  
 A new variety (dwarf bunt) 3286 Young 1935  
 "Inheritance of aggressiveness" 181 Becker 1936  
 Incidence in northeast Bulgaria 456 Cristoff 1936  
 Natural occurrence on crested wheat grass (*Agropyron cristatum*) 778 Fischer 1936  
 Relation of per cent bunt to per cent loss in yield 1667 Leukel 1937  
 Abnormal sporulation in resistant varieties 2672 Schlehuber 1937  
 Special greenhouse inoculation technique 3151 Voss 1937  
 Flour quality impaired 3214 Wickens 1937  
 Immunity not commercially necessary in wheat varieties 3215 Wiebe 1937  
 Case of respiratory allergy 3248 Wittich and Stakman 1937  
 All stages of partial infection described 918 Gassner 1938  
 "Forma intermedia" recognized. A form with very small reticulations and probably a natural hybrid with *Tilletia foetida* 917 Gassner 1938  
 Incidence and distribution in Turkey 917 Gassner 1938  
*Tilletia caries* f. *intermedia* with fine shallow reticulations 917 Gassner 1938.  
 Competition with other fungi in the soil 1149 Henry and Campbell 1938  
 Unique method of inoculation by use of paired monosporidial cultures 1242 Holton 1938  
 Application of statistical methods to physiologic specialization data 2600 Salmon 1938  
 Much less prevalent in Wyoming than *Tilletia caries* 2834 Starr 1938  
 No build-up of susceptibility when resistant varieties inoculated repeatedly with their own smut 212 Bever 1939  
 Aneurin an indispensable factor in growth 624 Defago 1939  
 Effect of physical condition of soil on extent of infection 3170 Walstedt 1939  
 As cause of hay fever and asthma 3246 Wittich 1939  
 Infection initiated in coleoptiles. Penetration of host by means of small peg through cuticle between epidermal cells 462 Churchward 1940  
 Zones of prevalence in Germany 1493 Klemm 1940  
 Comparative incidence with *Tilletia foetida* in Afghanistan and Turkey 1683 Limber 1940  
 Seasonal asthma caused by spores 631 Diaz *et al.* 1941  
 Multiplicity of morphological variants in Argentina 1195 Hirschhorn 1941

- Compilation of principal available information 1253 Holton and Heald 1941
- Effect of station location on bunt reaction 2521 Rodenhiser and Holton 1942
- Segregation of natural *Tilletia caries*  $\times$  *T. foetida* hybrids into two species: *T. triticoides* and *T. intermedia* 2633 Savulescu, Hulea and Stanescu 1942
- Dwarf bunt increasing as menace to western states 2523 Rodenhiser and Holton 1945
- First report of dwarf bunt in New York 3064 Tyler 1945
- Coincidence with *Tilletia foetida* in same caryopsis 979, 980 Grasso 1946
- Comparative incidence and morphology with *Tilletia triticoides* and *T. intermedia* 980 Grasso 1946
- Incidence and severity in Italy 979, 980 Grasso 1946
- Spores inside grain, between pericarp and endosperm 979 Grasso 1946
- Comparative distribution (with *Tilletia foetida*) in Bulgaria 1550 Kristev 1946
- Distribution and importance in Mexico 2531 Rodriguez 1946
- Host selectivity as means of eliminating weak strains of hybrids 1250 Holton 1947
- Rapid method of detecting infected heads of wheat 2339 Popp 1947
- Comparative incidence and morphology with *Tilletia triticoides* and *T. intermedia* 981 Grasso 1948
- PHYSIOLOGIC SPECIALIZATION
- 2427 Reed 1924
- 729 Faris 1924
- 2430 Reed 1927
- 2527 Rodenhiser and Stakman 1927
- 882, 883, 884 Gaines 1928
- 2433 Reed 1928
- 2513 Rodenhiser 1928
- 2533 Roemer 1928
- 1504 Knorr 1929
- 1233 Holton 1930
- 1461 Kienholz and Heald 1930
- 2471, 2472 Reichert 1930
- 1 Aamodt 1931
- 332, 333 Bressman 1931
- 658 Dillon Weston 1931
- 1234 Holton 1931
- 830 Flor *et al.* 1932
- 2773 Smith 1932
- 327 Brentzel 1933
- 829 Flor 1933

- 886 Gaines and Smith 1933  
 1237 Holton 1933  
 2141 Nieves 1933 (in Argentina)  
 2535 Roemer and Bartholly 1933  
 1239 Holton 1935  
 2143 Nieves 1935 (in Argentina)  
 1252 Holton and Heald 1936  
 2784 Spangenberg and Gutner 1936  
 2520 Rodenhiser and Holton 1937  
 2716 Selaries and Rohmer 1937  
 461 Churchward 1938  
 623 Defago 1938  
 1243 Holton 1938  
 2536 Roemer *et al.* 1938  
 782 Fischer 1939 (reaction of races to selections of crested and slender wheat grasses, *Agropyron cristatum* and *A. trachycaulum*)  
 816 Fittschen 1939  
 2635 Savulescu and Sandu-Ville 1939 (physiologic races in Romania composed of a complex of biotypes. Biometrically significant differences in some races)  
 3353 Zybina 1939  
 1253 Holton and Heald 1941  
 1246 Holton 1942  
 1255 Holton and Rodenhiser 1942  
 2521 Rodenhiser and Holton 1942  
 2523 Rodenhiser and Holton 1945  
 3300 Yu *et al.* 1945 (in China)  
 1550 Kristev 1946  
 1250 Holton 1947

#### SPORE GERMINATION AND FACTORS AFFECTING

- 2365, 2366 Prevost 1807  
 196 Berkeley 1847  
 3056 Tulasne and Tulasne 1854  
 3057 Tulasne and Tulasne 1854  
 201 Berkeley 1857  
 1557 Kühn 1859  
 1225 Hoffman 1860  
 2188 Ørsted 1863  
 803 Fischer v. Waldheim 1869  
 520 Cooke 1872  
 617 DeBary 1874  
 3252 Wolff 1874  
 1678 Von Liebenberg 1879  
 2664 Schindler 1880  
 2677 Schmalzer 1880  
 311 Brefeld 1883

- 313 Brefeld 1888  
2329 Plowright 1889  
3047 Tubeuf 1901  
3050, 3051 Tubeuf 1902  
3146 Volkart 1906  
1763 McAlpine 1910  
1260 Honcamp 1911  
2655 Schellenberg 1911  
2803 Stakman 1913  
1114 Heald and Woolman 1915  
1479 Kirchner 1916  
2231 Paravicini 1917  
2727 Sessous 1920  
590 Dastur 1921  
1163 Heuser 1922  
2416 Rawitscher 1922 (germination—reduction division—takes place within the spore and not in the promycelium)  
907 Gassner 1923  
2492 Riehm 1923  
3263 Woolman and Humphrey 1924  
395 Buller 1925  
1019 Hahne 1925  
1229 Hollrung 1925  
1655 Leszczenko 1927  
2390 Rabien 1927  
2407 Rapin 1927 (effect of temperature on)  
2957 Terenyi 1927  
1461 Kienholz and Heald 1930  
332 Bressman 1931  
826 Flor 1932  
3331 Zillig 1932  
393 Buller 1933  
2535 Roemer and Bartholly 1933  
3098 Vassilievsky 1933  
1043 Hanna 1934  
3179 Wang 1934  
2175 Olgyay 1935  
181 Becker 1936  
1737 Lobik and Dahlstrom 1936 (methods of)  
623 Defago 1938  
919 Gassner 1938  
1433 Keil 1940  
1245 Holton 1941 (of the "sterile" cells of dwarf bunt)  
1253 Holton and Heald 1941  
1248 Holton 1943 (dwarf bunt)  
2347 Potapov *et al.* 1943

- 1286 Hulea 1947 (including *Tilletia triticoides* and *T. intermedia*)  
 1740 Lowther 1948 (dwarf bunt)  
 VARIETAL RESISTANCE AND SUSCEPTIBILITY, AND INHERITANCE OF  
 3044 Tschärner 1764  
 1578 Kühn 1880  
 740 Farrer 1901 (pioneer work on varietal resistance)  
 2294 Pey 1901  
 3047 Tubeuf 1901 (pioneer work on varietal resistance)  
 169 Beattie 1902  
 3050 Tubeuf 1902 (pioneer work on varietal resistance studies)  
 744 Farrer 1904 (pioneer work on production of resistant varieties by hybridization)  
 745 Farrer 1905 (pioneer work on production of resistant varieties by hybridization)  
 1122 Hecke 1906  
 1476 Kirchner 1906  
 2887 Sutton 1906  
 62 Appel and Gassner 1907  
 1124 Hecke 1907  
 1276 Howard and Howard 1907  
 1850 Malkoff 1907  
 1477 Kirchner 1908  
 2250 Peglion 1908  
 582 Darnell-Smith 1909  
 1126 Hecke 1909  
 1759 McAlpine 1909  
 583 Darnell-Smith 1910  
 1761, 1763 McAlpine 1910  
 2888 Sutton 1910  
 2069 Munerati 1911  
 2070 Munerati 1912  
 3105 Vavilov 1913  
 3259 Woolman 1914  
 1114 Heald and Woolman 1915  
 1479 Kirchner 1916  
 1480 Kirchner 1916  
 875 Gaines 1918  
 3106 Vavilov 1918  
 3106 Vavilov 1918 (no permanent genetic resistance in wheat to *Tilletia caries*. Resistance has been confused with disease escaping.)  
 876 Gaines 1919  
 2253 Peglion 1919  
 2696 Schribaux 1919  
 2869 Strampelli 1919  
 877 Gaines 1920

- 1999 Morettini 1920  
 2889 Sutton 1920  
 3054 Tubeuf 1920  
     675 Donkin 1921  
 1481 Kirchner 1921  
 1163 Heuser 1922  
 2071 Munerati 1922  
 2839 Stephens and Woolman 1922  
     119 Babowitz 1923  
     368 Brown 1923  
     878 Gaines 1923  
 1303 Hurd 1923  
 1392 Johnston 1923  
     529 Coons 1924  
     947 Gibs 1924  
 1393 Johnston 1924  
 3264 Woolman and Humphrey 1924 (history of)  
 3302 Zade 1924  
     879 Gaines 1925  
 1304 Hurd-Karrer 1925  
 2728 Sessous 1925  
 2783 Spangenberg 1925  
 3014 Tisdale *et al.* 1925  
     343 Briggs 1926  
     885 Gaines and Singleton 1926  
     275 Borghardt 1927  
 2604 Sampson 1927  
 2865 Straib 1927  
 2998 Tingey 1927  
 2470 Reichert 1928  
     80 Arnaud 1929  
     329 Brentzel and Smith 1929  
     345 Briggs 1929  
     553 Creseke 1929  
     654 Dillon Weston 1929  
     948 Gibs 1929  
     950 Gieseke 1929  
 1504 Knorr 1929  
 1684 Limbourn 1929  
     84 Arnaud and Gaudineau 1930  
     346, 347, 348 Briggs 1930  
 1232 Holton 1930  
 1685 Limbourn 1930  
 2138, 2139 Nieves 1930 (same varieties resistant also to *Ustilago tritici*)  
 2471 Reichert 1930  
     1 Aamodt 1931

- 330, 332, 333 Bressman 1931  
349 Briggs 1931  
457 Churchward 1931  
951 Giljarovskij and Zak 1931  
86, 87 Arnaud and Gaudineau 1932  
335 Bressman 1932  
350, 351 Briggs 1932  
458 Churchward 1932  
659 Dillon Weston 1932  
665, 666 Djelaloff 1932  
764 Feucht 1932  
928 Gaudineau 1932  
1532 Krause 1932  
2769 Smith 1932  
90 Artemoff 1933  
338 Bressman and Harris 1933  
352 Briggs 1933  
476 Clark *et al.* 1933  
886 Gaines and Smith 1933  
1466 Kilduff 1933  
2074, 2075 Munerati 1933  
2535 Roemer and Bartholly 1933  
2669 Schlehuber 1933  
2775 Smith 1933  
116 Ausemus 1934  
353 Briggs 1934  
408 Calniceanu 1934  
2886 Sutherland and Jodon 1934  
3243 Wismer 1934  
354 Briggs 1935  
375 Bryzgalova 1935  
834 Fomin 1935  
2670 Schlehuber 1935  
2999 Tingey 1935  
1865 Martin 1936  
2144 Nieves 1936  
2671 Schlehuber 1936 (different degrees of resistance in  $F_2$  progeny)  
373 Bryan 1937  
550 Crepin, Bustarret and Chevalier 1937  
2716 Selaries and Rohmer 1937  
3151 Voss 1937  
3215 Wiebe 1937  
461 Churchward 1938  
552 Crepin, Bustarret and Chevalier 1938  
2525 Rodenhiser and Quisenberry 1938  
2536 Roemer *et al.* 1938



- 2673 Schlehuber 1938  
 3137 Vogel and Holton 1938  
     782 Fischer 1939 (of wheatgrasses)  
     816 Fittschen 1939  
 3353 Zybina 1939  
     355 Briggs 1940  
     133 Bamberg 1941  
 1253 Holton and Heald 1941  
 2824 Stanford 1941  
 1257 Holton and Suneson 1942  
 2521 Rodenhiser and Holton 1942 (variability in varietal reaction)  
     324 Bremer 1943  
 1258 Holton and Suneson 1943 (dwarf bunt)  
 3258 Woodward and Tingey 1944  
     126 Baker and Briggs 1945  
     699 El-Khishen and Briggs 1945  
 1550 Kristev 1946  
 2408 Rapin 1946

**TILLETIA CONTRAVERSA** Kühn\* Hedwigia 13: 188. 1874.

*Uredo segetum tritici-repentis* DC., Encycl. Bot. 8: 227. 1808.

*Uredo silophila agropyri* Opiz, Sesnam rostlin Kventeny ceske. ii + 216 pp. Prague. 1852.

*Tilletia tritici-repentis* (DC.) Liro, Ann. Acad. Sci. Fenn. A, 42: 77. 1938.

**HETEROTHALLISM AND SEX**

- 315 Brefeld 1895 (fusion of primary sporidia)

**LIFE HISTORY, PARASITISM AND FACTORS AFFECTING**

- 315 Brefeld 1895

- 1884 Mattiolo 1896

**MISCELLANEOUS**

Relationship to *Tilletia caries* and other species 1563 Kühn 1874

Morphology and symptoms 315 Brefeld 1895

Morphology and symptoms 2655 Schellenberg 1911

Relation to *Tilletia caries* 1724 Liro 1938

**SPORE GERMINATION AND FACTORS AFFECTING**

- 315 Brefeld 1895

**TILLETIA DECIPIENS** (Pers.) Körn. Hedwigia 16: 30. 1877.

*Uredo segetum* var. *decipiens* Pers., Syn. Fung. 225. 1801.

*Uredo decipiens* var. *graminum* Strauss, Ann. Wett. Ges. 2: 111. 1810.

*Erysibe sphaerococca* var. *agrostidis* Wallr., Fl. Krypt. Germ. 2: 213. 1833.

*Uredo (Ustilago) sphaerococca* Rabenh., Deutschland Krypt. Fl. 1: 4. 1844.

*Tilletia caries* var. *agrostidis* Auersw., Rabenh. Fungi Europ. 700. 1864.

*Tilletia sphaerococca* Fisch. v. Waldh., Bull. Soc. Nat. Mosc. 40: 255. 1867.

**CULTURE ON ARTIFICIAL MEDIA**

- 315 Brefeld 1895

\* Usually spelled *contraversa*, but Kühn, 1874, himself originally designated the species in question as "*contraversa*".

## HETEROTHALLISM AND SEX

315 Brefeld 1895 (fusion of primary sporidia)

## MISCELLANEOUS

Infected plants spurned by cattle 862 Fries 1823

Wheat immune to 3238 Winter 1878

Morphology and symptoms 315 Brefeld 1895

Morphology and symptoms 2655 Schellenberg 1911

Host range 1724 Liro 1938

Infected plants dwarfed and as such were described by Linnaeus  
as "*Agrostis pumila*" 1724 Liro 1938 1566 Kühn 1875Revision of *Tilletia*; comparison with *T. eremophila* and *T.*  
*muhlenbergiae* 1210 Hirschhorn 1944

## SPORE GERMINATION AND FACTORS AFFECTING

315 Brefeld 1895

2655 Schellenberg 1911

564 Cunningham 1924

**TILLETIA EARLEI** Griff. Bull. Torr. Bot. Club 29: 290. 1902.*Ustilago earlei* Cif., Trans. Brit. Mycol. Soc. 18: 263. 1934.

## MISCELLANEOUS

Should be placed in *Ustilago*, on basis of species description only  
472 Ciferri 1934**TILLETIA EREMOPHILA** Speg. Ann. Mus. Nac. Buenos Aires 12:  
(3) 291. 1902.*Tolyposporella eremophila* Cif., Soc. Bot. Ital. Fasc. 17: 224. 1938.

## MISCELLANEOUS

Revision of *Tilletia*; comparison with *T. muhlenbergiae* and *T.*  
*decipiens* 1210 Hirschhorn 1944**TILLETIA EUPHORBIAE** Lenz Mycologia 33: 155. 1941.

## MISCELLANEOUS

Symptoms and morphology 1650 Lenz 1941

## SPORE GERMINATION AND FACTORS AFFECTING

1650 Lenz 1941

**TILLETIA FOETIDA** (Wallr.) Liro Maanviljelys Talondellinen  
Doelaitos, Vuosikvija 1915-1916: 27. 1920.*Erysibe foetida* Wallr., Fl. Crypt. Germ. 2: 213. 1833.*Ustilago foetans* Berk. and Curtis, Ravenel Fungi Carol. 100. 1860.*Tilletia laevis* Kühn, Rabenh. Fungi Europ. 1697. 1873; Hedwigia 12: 152.  
1873.*Ustilago foetans* Berk. and Curtis, Hedwigia 3: 59. 1874; Ravenel Fungi  
Carol. 5: 100. 1860.*Tilletia foetans* Schröt., in Beitr. Biol. Pflanz. (Cohn) 2: 365. 1877.*Tilletia foetans* Trel., Paras. Fungi Wisc. 35: 1884; Trans. Wisc. Acad. Sci.  
6: 139. 1884.

## CONTROL

1471 Kirby 1799

2365, 2366 Prevost 1807 (Keitt 1939) (first demonstration of

toxicity of copper salts to the spores and recommendations of use for control)

- 489 Cobb 1891
- 1729 Ljubanski 1902
- 1901 Melchers 1916
- 525 Coons 1920
- 289 Bouillard 1922
- 526 Coons 1922
- 1113 Heald and Smith 1922
- 1187 Hiltner and Lang 1922 (fertilization with calcium cyanide)
- 2839 Stephens and Woolman 1922
- 527, 528 Coons 1923
- 847 Fraser and Simmonds 1923
- 907 Gassner 1923
- 920 Gassner and Esdorn 1923
- 1116 Heald, Zundel and Boyle 1923
- 2040 Müller *et al.* 1923
- 2095 Neill 1923
- 2816 Stakman and Lambert 1923
- 530 Coons 1924
- 587 Darnell-Smith 1924
- 710 Esdorn 1924
- 713 Esmarch 1924
- 759 Ferdinandsen 1924
- 775 Fischer 1924
- 908 Gassner 1924
- 1773 McKillican 1924
- 1915 Melchers and Walker 1924
- 2041 Müller *et al.* 1924
- 2382 Puttick 1924
- 2599 Salmon and Wormald 1924
- 3112 Vermorel 1924
- 3140 Vogt 1924
- 3205 Westermeier 1924
- 3263 Woolman and Humphrey 1924
- 123 Bailly 1925
- 166 Baunacke 1925
- 854 Friedrichs 1925
- 910 Gassner 1925
- 1229 Hollrung 1925
- 2045 Mullet 1925
- 2324 Plaut 1925
- 2494, 2496 Riehm 1925
- 3113 Vermorel 1925
- 926 Gassner and Rabien 1926
- 1168 Hilgendorff 1926

- 1659 Leukel 1926  
1920 Mencacci 1926  
2044 Müller *et al.* 1926  
2295 Pfeil 1926  
2505 Rivera 1926 (X-rays ineffective)  
2646 Schaffnit 1926  
3206 Westermeier 1926  
    40 Andreyeff 1927  
    703 Englisch 1927  
    913, 914 Gassner 1927  
    970 Gram 1927  
1222, 1223 Hoffman 1927  
1463 Kiesselbach 1927  
1687 Limbourn and Throssell 1927  
1978 Molz 1927 (history of dusting seed for control)  
2263 Petit 1927  
2500 Riehm 1927  
3142, 3143 Volk 1927  
    12 Adams 1928  
    276 Borghardt 1928  
    712 Esdorn 1928  
    831, 832 Florimond-Desprez 1928  
    869 Fromme 1928  
    971 Gram 1928  
1012 Guyot 1928  
1745 Lungren and Durrell 1928  
2133, 2134 Niethammer 1928  
2254 Peltier 1928  
2264, 2265, 2266, 2267 Petit 1928  
2008 Morris and Kurtz 1929  
2268 Petit 1929  
3144 Volk 1929  
    83, 84 Arnaud and Gaudineau 1930  
1110 Heald and Gaines 1930  
1187 Hiltner and Tornow 1930  
2270, 2271 Petit 1930  
    10 Abramoff 1931  
2272, 2273, 2274, 2275, 2277 Petit 1931  
3061 Twentymen 1931  
    86, 87 Arnaud and Gaudineau 1932  
    278 Borghardt 1932  
    665, 666 Djelaloff 1932  
    678 Dounine and Simsky 1932  
1532 Krause 1932  
2278 Petit 1932  
2302 Pichler 1932  
    691 Eckhoff 1933

- 2279 Petit 1933  
1704 Lindfors 1934  
2018 Morwood 1935  
2047 Muncie and Frutchev 1935  
2256 Perevesentzeva 1935  
2281, 2283 Petit 1935  
2303, 2304 Pichler 1935  
626 Denaiffe *et al.* 1936  
1252 Holton and Heald 1936  
2618 Sandu-Ville 1936  
1667 Leukel 1937  
2794 Sprague *et al.* 1937  
777 Fischer *et al.* 1938  
1275 Houdayer 1938  
1866 Martin 1938  
1867 Martin and Sprague 1938 (no differences in response of  
various races to seed treatment)  
1672 Leukel and Nelson 1939  
2290 Petit 1939  
2793 Sprague 1939  
1410, 1411 Jones and El Nasr 1940  
2030 Mourashkinsky 1940  
1253 Holton and Heald 1941  
1353 Jamalainen 1943  
81 Arnaud 1944  
2632 Savulescu and Hulea 1944  
324 Bremer 1945  
3283 Yersin *et al.* 1945  
191 Benloch 1946 (laboratory tests of fungicides)  
2756 Simmonds 1948 (use of oil to counteract dust nuisance with  
fungicides)

## CULTURE ON ARTIFICIAL MEDIA

- 240 Bodine and Durrell 1930  
1461 Kienholz and Heald 1930  
239 Bodine 1931  
826 Flor 1932  
393 Buller 1933  
829 Flor 1933  
1908 Melchers 1934  
623 Defago 1938  
1253 Holton and Heald 1941  
1286 Hulea 1947

## CYTOLOGY

- 771 Fisch 1885  
579 Dangeard 1892  
1840 Maire 1902  
2415 Rawitscher 1914

- 393 Buller 1933
- 1043 Hanna 1934
- 3179 Wang 1934
- 1253 Holton and Heald 1941

## HETEROTHALLISM AND SEX

- 825 Flor 1931
- 826 Flor 1932
- 1043 Hanna 1934
- 1253 Holton and Heald 1941
- 1286 Hulea 1947

## HOST RANGE

- 1332 Ivanoff 1926 (rye infected in Bulgaria)
- 1734 Lobik 1930 (on rye in North Caucasus)
- 334 Bressman 1932 (*Lolium* infected)
- 2141 Nieves 1933 (infection of rye)
- 2143 Nieves 1935 (infection of rye)
- 778 Fischer 1936
- 1724 Liro 1938
- 782 Fischer 1939 (new grass hosts)
- 18 Ajroldi 1940 (rye not susceptible under Italian conditions)
- 1253 Holton and Heald 1941

## HYBRIDIZATION AND GENETICS

- 825 Flor 1931 (with *Tilletia caries*)
- 826 Flor 1932 (with *Tilletia caries*)
- 1043 Hanna 1934 (with *Tilletia caries*)
- 181 Becker 1936 (with *Tilletia caries*)
- 917 Gassner 1938 (natural hybridization with *Tilletia caries*)
- 1243 Holton 1938 (with *Tilletia caries*)
- 1245 Holton 1941 (*Tilletia foetida* × "dwarf bunt" race of *Tilletia caries*)
- 1253 Holton and Heald 1941
- 1247 Holton 1942 (pathogenicity of hybrids with *Tilletia caries*)
- 1249 Holton 1944 (inheritance of chlamydospore and sorus characters in inter-race and inter-species hybrids with *Tilletia caries*)
- 1250 Holton 1947 (with *Tilletia caries*)

## LIFE HISTORY, PARASITISM AND FACTORS AFFECTING

- 2995 Tillet 1755
- 1471 Kirby 1799
- 1560 Kühn 1873 (early inoculation experiments with *Triticum* spp.)
- 1562 Kühn 1874
- 3252 Wolff 1874
- 93, 94 Arthur 1889
- 263 Bolley 1897
- 2717 Selby 1898
- 3047, 3048 Tubeuf 1901

- 3049, 3050, 3051 Tubeuf 1902  
1729 Ljubanski 1902  
1333 Ivanoff 1903  
1271 Hori 1907  
2250 Peglion 1908  
1763 McAlpine 1910  
2252 Peglion 1910  
321 Brcfeld 1912  
139 Barrus 1916  
2351, 2352 Potter and Coons 1918  
1163 Heuser 1922  
1186 Hiltner and Lang 1922  
2071 Munerati 1922  
2072 Munerati 1923  
729 Faris 1924  
946, 947 Gibbs 1924  
1936 Milan 1924  
2427 Reed 1924  
3263, 3264 Woolman and Humphrey 1924  
910 Gassner 1925  
2024 Mourashkinsky 1925  
46 Antonoff 1926  
424 Caspar 1926  
3206 Westermeyer 1926  
1937 Milan 1927 (artificial infection of maturing wheat)  
2613 Sampson and Davies 1927  
2865 Straib 1927  
40 Andreyeff 1927  
41 Andreyeff 1928  
869 Fromme 1928  
1745 Lungren and Durrell 1928  
1938 Milan 1928  
2031 Mouravieff 1928  
9 Abramoff 1930  
1110 Heald and Gaines 1930  
2138 Nieves 1930  
1941 Milan 1931  
665, 666 Djelaloff 1932  
764 Feucht 1932  
828 Flor 1932  
2028 Mourashkinsky 1932  
2774 Smith 1932  
829 Flor 1933  
3285 Young 1933  
1043 Hanna 1934  
2029 Mourashkinsky 1934  
17 Ajroldi 1937

- 550 Crepin *et al.* 1937  
 1667 Leukel 1937  
 623 Defago 1938  
 917, 918, 919 Gassner 1938  
 1409 Jones and El Nasr 1938  
 1866 Martin 1938  
 2834 Starr 1938  
 3119 Vielwerth 1938  
 782 Fischer 1939 (perennation in perennial hosts)  
 2793 Sprague 1939  
 18 Ajroldi 1940  
 1071 Hanson and Tervet 1940  
 1493 Klemm 1940  
 2529 Rodenhiser and Taylor 1940  
 1253 Holton and Heald 1941  
 2521 Rodenhiser and Holton 1942  
 2632 Savulescu and Hulea 1944  
 134 Bamberg *et al.* 1947
- LONGEVITY OF SPORES
- 1678 von Liebenberg 1879  
 2759 Sitensky 1896  
 3263, 3264 Woolman and Humphrey 1924  
 1004 Guest 1929  
 779 Fischer 1936  
 1253 Holton and Heald 1941
- MISCELLANEOUS
- Effect on wheat quality 1471 Kirby 1799  
 Infected plants little if any dwarfed as compared with those infected with *Tilletia caries* 1076 Harwood 1892  
 Bunt spores killed in passage through alimentary tract of horses or cattle 3051 Tubeuf 1902  
 Quantitative determination of spores in flour, bran and grain 306 Bredemann 1911  
 Chemistry of spore contents 3322, 3323 Zellner 1911  
 Seed heavily contaminated with spores is not injurious as feed for livestock 2380 Pusch 1912  
 Chemistry of the spores 3324 Zellner 1912  
 Fires in threshing separators due to spontaneous combustion of spores 416 Cardiff *et al.* 1914  
 Determination of smut spore content in flour, bran and grain 307, 308 Bredemann 1915  
 Pathological morphology 139 Barrus 1916  
 Comparison with *Tilletia caries* re symptoms and morphology 2351, 2352 Potter and Coons 1918  
 Effect of formaldehyde on wheat seed 128 Bakke and Plagge 1919  
 Prevention of explosions and fires in threshing machines due to smut 2539 Roethe 1920



- Smut-infected plants more susceptible to rusts 3110 Verhoeven 1920
- Suppression of awns in wheat-spelt hybrid 2965 Thatcher 1921
- Effect of control measures on germination of seed 3339, 3340 Zundel 1921
- Effect of formaldehyde on wheat 111 Atwood 1922
- Modification of importance of spore load to per cent smut in crop 2071 Munerati 1922
- Caused by wind-borne spores in Oregon 2839 Stephens and Woolman 1922
- In western but not eastern Oregon 2839 Stephens and Woolman 1922
- Determination of spore load 309 Bredemann 1923
- Relation of spore load to per cent smut 1109 Heald and Boyle 1923
- Effect of formaldehyde on seed wheat 125 Baker 1924
- Literature review and history 500 B.C. to 1924 3264 Woolman and Humphrey 1924
- Factors contributing to recent severity in Turkestan 3314 Zaprometoff 1924
- Biochemistry of the action of fungicides on the spores 249 Bodnar and Terenyi 1925
- Morphological responses of host 2024 Mourashkinsky 1925
- Comparatively rare in Russia 2751 Sigriansky 1925
- Stimulatory action of certain fungicides on wheat 228 Bittera 1926
- Biochemistry of the action of fungicides on the spores 249-254 Bodnar and Terenyi 1926-33
- Losses in Kansas and Colorado 1079 Haskell 1926
- Copper carbonate treated seed not bothered by mice 1788 Mackey and Briggs 1926
- Comparative distribution of *Tilletia caries* and *T. foetida* in U. S. 3012 Tisdale *et al.* 1926
- Toxic effects of bunt-contaminated wheat bran on sheep and pigs 3189 Weiser 1926
- No correlation between thickness of pericarp and rate of germination of seed and susceptibility to formalin injury 3325 Zeuschner 1926
- Artificial infection of maturing wheat 1937 Milan 1927
- Effect on growth and morphology 2613 Sampson and Davies 1927
- More important on winter wheat 41 Andreyeff 1928
- Rye mixed with winter wheat resulted in higher percentage of bunt 129 Balakhonoff 1928
- Infection of wheat plants by application of spores to wounds at base of plants 1938 Milan 1928

- Wheat can become infected with bunt when spores are present in tissues at base of culms during growing period of host 1938 Milan 1928
- Increase of strain of smut on same wheat variety increases virulence of strain 2026 Mourashkinsky 1928
- Effect of smut spores on the digestibility of milling bran 2893 Svoboda 1928
- Incidence in Bulgaria 106 Atanasoff 1929
- Method of washing wheat free of smut 147 Bates *et al.* 1929
- Effect of grazing on extent of wheat smut 768 Finnell 1929
- Determination of number of spores in grain samples 933 Gentner 1929
- Simultaneous incidence with *Tilletia caries* on same plant 2772 Smith 1929
- Effect of soil type and reaction on efficacy of fungicidal dusts 3144 Volk 1929
- Inoculation methods 240 Bodine and Durrell 1930
- Inoculation of wheat plants up to 18 inches tall 240 Bodine and Durrell 1930
- Production of chlamydospores in culture 240 Bodine and Durrell 1930
- Biochemistry of the action of fungicides on the spores 252 Bodnar and Terrenyi 1930
- Prevalence in western Canada 1049 Hanna and Popp 1930
- Increasing prevalence in U. S. 1086 Haskell *et al.* 1930
- Inoculations with pure cultures gave purely negative results 1461 Kienholz and Heald 1930
- Not practicable to separate physiologic forms on constant cultural characters 1461 Kienholz and Heald 1930
- Incidence on rye 1734 Lobik 1930
- Double plate method good for culturing 239 Bodine 1931
- Correlation between amount of infection in field with official grading for smut in threshed grain 1083 Haskell and Boerner 1931
- Durum spring wheats more susceptible than hard red ones 1083 Haskell and Boerner 1931
- Epiphytotic due to development of new forms 1234 Holton 1931
- No hereditary acquired immunity developed from seed selected from partially smutted or smut-free plants in a smutted lot 2275 Petit 1931
- Length of host plant culms reduced by 2514 Rodenhiser 1931
- Immune varieties should be treated because of possibility of latent infection 3304 Zade 1931
- Latent infection can cause considerable reduction in stand of immune varieties 3304 Zade 1931
- Relation of "stimulatory" effect of certain fungicides to latent infection 3304 Zade 1931
- Incidence of smut-docked wheat as a result of contamination with

- spores of *Ustilago utriculosa* from *Polygonum lapathifolium* 5  
Aamodt and Malloch 1932
- On *Lolium* spp. 334 Bressman 1932
- Produces taller infected plants than does *Tilletia caries* 336 Bressman 1932
- Relation of ridged versus flat rows as influencing infection—669  
Dobromysloff 1932
- Both slender and thick types of smut balls produced by *Tilletia foetida* and *T. caries* 764 Feucht 1932
- Effect of fertilizers on 764 Feucht 1932
- Higher incidence of infection following peas than wheat 764  
Feucht 1932
- An undertermined number of sex groups represented 826 Flor 1932
- Production of chlamydospores in vegetative parts of secondary  
shoots of plants that had not previously shown smut 828 Flor  
1932
- Relation of time of planting to the efficacy of copper carbonate  
dust for control 827 Flor 1932
- Cause of odor of spores and genetic dominance of same 1042  
Hanna 1932
- Isolation of trimethylamine from spores 1060 Hanna *et al.* 1932
- Trimethylamine, the cause of bunt odor, not in *Tilletia caries*  
1042 Hanna *et al.* 1932
- High percentage of infection resulting from wound inoculations  
1942 Milan 1932 (needle prick at base of culm or by being  
broken off at base of culm)
- Build-up of virulence by five years continuous passage through  
same wheat variety 2026, 2027 Mourashkinsky 1932
- Count of infected plants does not give actual loss 2028 Mourash-  
kinsky 1932
- Effect of source of origin on susceptibility 2026, 2027 Mourash-  
kinsky 1932
- Increase of strain of smut on same wheat variety increases viru-  
lence of strain 2027 Mourashkinsky 1932
- Transfer of smut immunity to hard red spring wheat 2769 Smith  
1932
- Effect of fall versus spring planting on susceptibility of Hope  
wheat 2774 Smith 1932
- Further studies on latent infection and effect on host plant 3305  
Zade 1932
- Biochemistry of the action of fungicides on the spores 254 Bodnar  
and Terenyi 1933
- Successful artificial inoculation of emmer 327 Brentzel 1933
- Screening effect of differential varieties on mixed collections 829  
Flor 1933
- More caryopses on bunted heads than on healthy ones 1945 Milan  
1933

- Severely affected plants tiller less than healthy ones 1945 Milan 1933
- Comparative (with *Tilletia caries*) prevalence and distribution in Argentina 2145 Nieves *et al.* 1933
- Soil infestation of chlamydospores 3285 Young 1933
- Recognition of infection by deformation of seedlings 42 Angell 1934
- Build-up of pathogenicity by repeated inoculation of variety with own smut 1908 Melchers 1934
- Comparative (with *Tilletia caries*) incidence in Romania 2617 Sandu-Ville 1934
- Biochemistry of the action of fungicides on the spores 255 Bodnar *et al.* 1935
- Removing smut balls from seed wheat 1310 Hurst *et al.* 1935.
- Comparison with *Tilletia caries* and *T. indica* 1963 Mitra 1935
- Effect of infection on the morphology of wheat plants 7 Aamodt *et al.* 1936
- Longevity of spores; at least 25 years 779 Fischer 1936
- Ratio of per cent bunt to per cent loss in yield 1667 Leukel 1937
- Effect of bunt on the host varies with the wheat variety 2672 Schlehuber 1937
- Freezing injury more severe in certain varieties of wheat infected with bunt 2672 Schlehuber 1937
- Flour quality impaired by 3214 Wickens 1937
- Causing respiratory allergy 3248 Wittich and Stakman 1937
- All stages of partial infection described 918 Gassner 1938
- Incidence and distribution in Turkey 917 Gassner 1938
- Effect of bunt infection on root development 1136 Hely *et al.* 1938
- Competition with other fungi in soil 1149 Henry and Campbell 1938
- Unique method of inoculating with paired monosporidial cultures 1242 Holton 1938
- Screening effect of wheat varieties on smut mixtures 2399 Radulescu 1938
- Application of statistical methods to physiologic specialization data 2600 Salmon 1938
- Much more prevalent than *Tilletia caries* in Wyoming 2834 Starr 1938
- Build-up of pathogenicity when collection cultured successively on other than host variety on which collected 3119 Vielwerth 1938
- Decline in pathogenicity when collection cultured on only moderately susceptible host and same host on which collected 3119 Vielwerth 1938
- No build-up of susceptibility of host or pathogenicity of race when resistant varieties inoculated repeatedly over a three-year period with their own smut 212 Bever 1939

- Causes chlorotic mottling of wheat leaves 1396 Johnston and Lefebvre 1939
- Effect of physical condition of soil on extent of infection 3170 Walstedt 1939
- As cause of hay fever and asthma 3246 Wittich 1939
- Effect of fertilizers on development 1071 Hanson and Tervet 1940
- Zones of prevalence in Germany 1493 Klemm 1940
- Comparative incidence with *Tilletia caries* in Afghanistan and Turkey 1683 Limber 1940
- Vernalized seed gives high rate of infection 2030 Mourashkinsky 1940
- Influence of soil type, sterilization and pH on extent of infection at different temperatures 2528, 2529 Rodenhiser and Taylor 1940
- Seasonal asthma caused by spores 631 Diaz *et al.* 1941
- Pine wood smoke only partially effective as control 1353 Jama-lainen 1942
- Effect of station location on bunt reaction 2521 Rodenhiser and Holton 1942
- Segregation of natural *Tilletia caries*  $\times$  *T. foetida* hybrids into two species: *Tilletia triticoides* and *T. intermedia* 2633 Savulescu *et al.* 1942
- Improved method of determining spore load as indication of need for seed treatment 431 Cherewick 1944
- Rag-doll technique for inoculation purposes 1728 Livingston and Kneen 1944
- Coincidence with *Tilletia caries* in same caryopsis 979, 980 Grasso 1946
- Incidence and importance in Italy 979, 980 Grasso 1946
- Spores inside grain between pericarp and endosperm 979 Grasso 1946
- Fusarial head blight depresses when in same plant 1068 Hanson 1946
- Predisposes infected plants to seedling blight 1069 Hanson 1946
- Comparative (with *Tilletia caries*) distribution in Bulgaria 1550 Kristev 1946
- Distribution and importance in Mexico 2531 Rodriguez 1946
- Depresses dwarf bunt when in same plant 134 Bamberg *et al.* 1947
- Spore load of grain as indication of need for seed treatment 432, 433 Cherewick 1947 and 1948
- Host selectivity as means of eliminating weak hybrids (*Tilletia caries*  $\times$  *T. foetida*) 1250 Holton 1947
- Rapid method of detecting infection in heads of wheat 2339 Popp 1947

## PHYSIOLOGIC SPECIALIZATION

- 2430 Reed 1927
- 2527 Rodenhiser and Stakman 1927
- 882, 883, 884 Gaines 1928
- 2433 Reed 1928
- 2513 Rodenhiser 1928
- 106 Atanasoff 1929
- 1461 Kienholz and Heald 1930
- 1 Aamodt 1931
- 332, 333 Bressman 1931
- 1234 Holton 1931
- 327 Brentzel 1933
- 829 Flor 1933
- 886 Gaines and Smith 1933
- 2141 Nieves 1933
- 1908 Melchers 1934
- 2143 Nieves 1935
- 2520 Rodenhiser and Holton 1937
- 3119 Vielworth 1938
- 782 Fischer 1939 (reaction of races to selections of crested and slender wheat grasses)
- 2635 Savulescu and Sandu-Ville 1939 (physiologic races in Romania composed of a complex of biotypes. Biometrically significant differences in some races.)
- 3351 Zybina 1939
- 1253 Holton and Heald 1941
- 1255 Holton and Rodenhiser 1942
- 2521 Rodenhiser and Holton 1942
- 1067 Hansing and Melchers 1945
- 2523 Rodenhiser and Holton 1945 (5 new races)
- 3300 Yu *et al.* 1945

## SPORE GERMINATION AND FACTORS AFFECTING

- 3252 Wolff 1874
- 2159 Norton 1896
- 482 Clinton 1902
- 3146 Volkhart 1906
- 2803 Stakman 1913
- 1163 Heuser 1922
- 3263 Woolman and Humphrey 1924
- 1019 Hahne 1925
- 1229 Hollrung 1925
- 1937 Milan 1927
- 2390 Rabien 1927
- 240 Bodine and Durrell 1930
- 1461 Kienholz and Heald 1930
- 332 Bressman 1931
- 826 Flor 1932

- 2175 Olgyay 1935
- 623 Defago 1938
- 919 Gassner 1938
- 1253 Holton and Heald 1941
- 1550 Kristev 1946
- 1286 Hulea 1947

## VARIETAL RESISTANCE AND SUSCEPTIBILITY, AND INHERITANCE OF

- 740 Farrer 1901
- 1850 Malkoff 1907
- 582 Darnell-Smith 1909
- 1759 McAlpine 1909
- 2383 Pye 1909
- 583 Darnell-Smith 1910
- 1761, 1763 McAlpine 1910
- 675 Donkin 1921 (*Triticum* spp.)
- 1481 Kirchner 1921
- 2839 Stephens and Woolman 1922
- 529 Coons 1924
- 1393 Johnston 1924
- 2427 Reed 1924
- 2817 Stakman *et al.* 1924
- 3302 Zade 1924
- 2795 Stadler 1925
- 881 Gaines 1927
- 2465 Straib 1927
- 2513 Rodenhiser 1928
- 329 Brentzel and Smith 1929
- 1684 Limbourn 1929
- 1685 Limbourn 1930
- 2138, 2139 Nieves 1930 (same varieties also resistant to *Ustilago tritici*)
- 1 Aamodt 1931
- 330, 332, 333 Bressman 1931
- 2140 Nieves 1931
- 86, 87 Arnaud and Gaudineau 1932
- 335 Bressman 1932
- 1532 Krause 1932
- 2769 Smith 1932
- 90 Artemoff 1933
- 476 Clark *et al.* 1933
- 886 Gaines and Smith 1933
- 1466 Kilduff 1933
- 2669 Schlehuber 1933
- 2775 Smith 1933
- 2886 Sutherland and Jodon 1934
- 3243 Wismer 1934
- 2670 Schlehuber 1935

- 1865 Martin 1936  
 2144 Nieves 1936  
     50 Crepin *et al.* 1937  
 2525 Rodenhiser and Quisenberry 1938  
 3137 Vogel and Holton 1938  
     782 Fischer 1939 (wheat grasses)  
 3353 Zybina 1939  
     47 Apostolides 1940  
 1253 Holton and Heald 1941  
 2521 Rodenhiser and Holton 1942 (variability in varietal reaction)  
     324 Bremer 1943  
 3258 Woodward and Tingey 1944  
 1550 Kristev 1946

**TILLETIA FUSCA** Ell. and Ev. Jour. Mycol. 3: 55. 1887.

MISCELLANEOUS

- Very prevalent smut on annual fescues in central Washington 993  
 Griffiths 1903

- Symptoms and morphology 1763 McAlpine 1910

SPORE GERMINATION AND FACTORS AFFECTING

- 1763 McAlpine 1910  
 796 Fischer and Hirschhorn 1945

**TILLETIA GUYOTIANA** Hariot Jour. Bot. (Paris) 14: 117. 1900.  
*Thecaphora guyotiana* Hariot, Mem. Soc. Acad. Aube 61: 195. Hyponym. 1898.

*Tilletia velenovskiyi* Bubak, Österr. Bot. Zeitschr. 53: 51. 1903.

*Tilletia belgradensis* Magnus, Hedwigia 48: 145. 1908.

MISCELLANEOUS

- Host range 1724 Liro 1938  
 First report from Switzerland 3148 Volkart 1939

SPORE GERMINATION AND FACTORS AFFECTING

- 796 Fischer and Hirschhorn 1945

**TILLETIA HOLCI** (Westend.) DeToni In Sacc. Syll. Fung. 7: 484. 1888.

*Polycystis holci* Westend., Bull. Acad. Belg. II. 11: 651. 1861.

*Tilletia rauwenhoffii* Fisch. v. Waldh., Aperçu Syst. Ust. 50. 1877.

CULTURE ON ARTIFICIAL MEDIA

- 3095 Vanterpool 1932

LIFE HISTORY, PARASITISM AND FACTORS AFFECTING

- 2149 Noack and Fahrenhorff 1925  
 3331 Zillig 1932  
 1724 Liro 1938

MISCELLANEOUS

- First report from North America 1338 Jackson 1920  
 Incidence on *Holcus* in Oregon 1338 Jackson 1920



Formation of clamp connections on the mycelium 2732 Seyfert 1927

Incidence in food samples of *Holcus lanatus* 677 Dorph-Peterson 1931

Longevity of spores; at least 12 years (as *Tilletia rauwenhoffii*) 779 Fischer 1936

SPORE GERMINATION AND FACTORS AFFECTING

3095 Vanterpool 1932

**TILLETIA HORDEI** Körn. Hedwigia 16: 30. 1877.

? *Tilletia trauti* Jaczewski, Bull. Soc. Mycol. France 9: 50. 1893.

MISCELLANEOUS

Review of other *Tilletia* spp. described on *Hordeum* spp. 1724 Liro 1938

SPORE GERMINATION AND FACTORS AFFECTING

1763 McAlpine 1910

**TILLETIA HYALOSPORA** Massee Kew Bul. 153-154: 148. 1899.

MISCELLANEOUS

Revision of *Tilletia*; comparison with *Tilletia hypsophila* 1204 Hirschhorn 1942

**TILLETIA HYPHOPHILA** Speg. Anal. Mus. Nac. Buenos Aires 12: 59. 1902.

MISCELLANEOUS

Revision of *Tilletia*; comparison with *Tilletia hyalospora* 1204 Hirschhorn 1942

**TILLETIA LOLII** Auerswald Klotzsch-Rabenh., Herb. Viv. Mycol. ed. I. 1899: 1855.

CYTOLOGY

2416 Rawitscher 1922

MISCELLANEOUS

Wheat not susceptible 3238 Winter 1878

Host range 1724 Liro 1938

SPORE GERMINATION AND FACTORS AFFECTING

1557 Kühn 1859

2416 Rawitscher 1922

**TILLETIA MUHLENBERGIAE** Clint. N. A. Flora 7: 46. 1906.

MISCELLANEOUS

Revision of *Tilletia*; comparison with *Tilletia eremophila* and *T. decipiens* 1204 Hirschhorn 1942

**TILLETIA OLIDA** (Riess) Winter Rabenh. Krypt. Fl. 1: 107. 1881.

*Uredo olida* Riess, Klotzsch-Rabenh. Herb. Viv. Mycol. 1695. 1852.

*Tilletia endophylla* DeBary, Rabenh. Viv. Mycol. ed. nova 500. 1857.

*Ustilago olida* Cif., Fl. Ital. Crypt. 17: 296. 1938.

LIFE HISTORY, PARASITISM AND FACTORS AFFECTING

803 Fischer v. Waldheim 1869

## MISCELLANEOUS

- Closely related to *Tilletia sessleriae* 1422 Juel 1894
- Morphology and symptoms 2655 Schellenberg 1911
- Comparative morphology on different hosts 1724 Liro 1938
- Host range 1724 Liro 1938

## SPORE GERMINATION AND FACTORS AFFECTING

- 2698 Schröter 1877

**TILLETIA PANCICII** Bubak and Ranojevic Zeitschr. Landw. Versuch. Österr. 1899: 545.

## CONTROL

- 1596 Kuribayashi and Ichikawa 1946

## LIFE HISTORY, PARASITISM AND FACTORS AFFECTING

- 1595 Kuribayashi and Ichikawa 1945

## MISCELLANEOUS

- Morphology and symptoms and comparison with other *Tilletia* spp. 378 Bubak 1909
- Considered cause of stinking smut of barley 2945 Tasugi and Yamde 1925
- Infection of barley varieties with 665 Djelaloff 1932

**TILLETIA SECALIS** (Corda) Kühn Deutsche Landw. Ztg. 19: 650. 1876.

*Uredo secalis* Corda, in Hlubek, Oekon. Neuigk. u. Verhand. 1848: 10.

## LIFE HISTORY, PARASITISM AND FACTORS AFFECTING

- 535 Corda 1848
- 1569 Kühn 1876
- 2171 Oertel 1887

## MISCELLANEOUS

- Collected in N. Y. in 1892; considered distinct from *Tilletia caries* 1338 Jackson 1920
- History, distribution and losses in Russia 1346 Jaczewski 1923
- Effect on animals 39 Andres and Trussov 1924
- Heavy losses in rye in Russia 2751 Sigriansky 1925
- Biologically closely related to *Tilletia caries* 2751 Sigriansky 1925
- Incidence in Kaluga, Russia 2006 Morozov 1926
- Very prevalent in Czecho-Slovakia in 1931 231 Blattny 1931
- Considered to be a form of *Tilletia caries* 331 Bressman 1931
- Early history 1724 Liro 1938
- Validity of the species 1724 Liro 1938
- Capricious in severity from year to year 3148 Volkart 1939
- Difficult to induce spore germination 3148 Volkart 1939
- Distinct from *Tilletia caries* on basis morphology and pathogenicity 3148 Volkart 1939

**TILLETIA SEPARATA** Kunze Kunze, Fungi Sel. Exs. No. 29. 1876.

## LIFE HISTORY, PARASITISM AND FACTORS AFFECTING

- 2698 Schröter 1877
- 1724 Liro 1938

## MISCELLANEOUS

- Foetid odor of spores 2698 Schröter 1877  
 Morphology and symptoms 2835 Stec-Rouppertowa 1932  
 Incidence in Poland 2835 Stec-Rouppertowa 1932  
 Longevity of spores; at least 12 years 779 Fischer 1936  
 Host range 1724 Liro 1938

## PHYSIOLOGIC SPECIALIZATION

1724 Liro 1938

**TILLETIA TEXANA** Long in Clint. Jour. Mycol. 8: 149. 1902.

## MISCELLANEOUS

- Morphology and symptoms 2548 Rosen 1921  
 Relationship to certain other species of *Tilletia* 2548 Rosen 1921

**TILLETIA TUMEFACIENS** H. and P. Sydow Ann. Mycol. 10: 255. 1912.

## MISCELLANEOUS

- Effect on host and general characteristics of the smut 2060 Mundkur 1944  
 Powerful trimethylamine odor 2060 Mundkur 1944

**TILLETIA WILCOXIANA** Griff. Bull. Torr. Bot. Club 31: 88. 1904.

## MISCELLANEOUS

- Infected plants of *Stipa eminens andersoni* (*S. lepida andersoni*)  
 erroneously described as new species, *S. hassei* 3219 Wilcox 1902

**TILLETIA ZONATA** Bref. Unters. Gesamt. Myk. 12: 161. 1895

## CULTURE ON ARTIFICIAL MEDIA

315 Brefeld 1895

## HETEROTHALLISM AND SEX

315 Brefeld 1895 (fusion of primary sporidia)

## LIFE HISTORY, PARASITISM AND FACTORS AFFECTING

315 Brefeld 1895

## MISCELLANEOUS

Morphology 315 Brefeld 1895

**TILLETIA ZUNDELI** Hirschh. Rev. Argentina Agron. 10: 186-189. June 1943.

## MISCELLANEOUS

- Description of disease and effect on host 1207 Hirschhorn 1943  
 Technical description 1207 Hirschhorn 1943

**TOLYOSPORIUM ANTHISTIRIAE** Cobb Agric. Gaz. New S. Wales 3: 1006. 1892.

*Tolyosporium anthistiriae* P. Henn., Hedwigia 37: 283. 1898.

*Tolyosporium bursum* McAlp., Smuts of Australia, p. 186. 1910.

## MISCELLANEOUS

- Spore longevity at least four years 1763 McAlpine 1910  
 Symptoms and morphology 1763 McAlpine 1910

## SPORE GERMINATION AND FACTORS AFFECTING

1763 McAlpine 1910

**TOLYPOSPORIUM BULLATUM** Schröt. Krypt. Fl. Schles. 3: 276. 1887.

*Sorosporium bullatum* Schröt., Abh. Schles. Ges. Abth. Nat. Med. 1869-70: 6. 1870.

*Tolyposporium senegalense* Speg., Ann. Museo Nac. Hist. Nat. 26: 118. 1914.

**CULTURE ON ARTIFICIAL MEDIA**

315 Brefeld 1895

**MISCELLANEOUS**

Morphology 315 Brefeld 1895

Morphology and symptoms 2655 Schellenberg 1911

*Tolyposporium senegalense* is synonym 1197 Hirschhorn 1941

**SPORE GERMINATION AND FACTORS AFFECTING**

2730 Setchell 1892

315 Brefeld 1895

2655 Schellenberg 1911

**TOLYPOSPORIUM CENCHRI** Bref. Unters. Gesamt. Myk. 12: 156. 1895.**CULTURE ON ARTIFICIAL MEDIA**

315 Brefeld 1895

**LIFE HISTORY, PARASITISM AND FACTORS AFFECTING**

315 Brefeld 1895

**MISCELLANEOUS**

Morphology 315 Brefeld 1895

**SPORE GERMINATION AND FACTORS AFFECTING**

315 Brefeld 1895

**TOLYPOSPORIUM EHRENBURGII** (Kühn) Patouillard Bull. Soc. Mycol. (France) 19: 254. 1903.

*Sorosporium ehrenbergii* Kühn, Mitteil. Ver. Erdkunde (Holle) 1877: 87. 1887.

*Tolyposporium filiferum* Busse, Arb. K. Biol. Abt. Landw. Forstw. 4: 384. 1904.

*Sorosporium filiferum* Zundel, Mycologia 22: 148. 1930.

**CONTROL**

360 Britton-Jones 1922

3169 Wallace 1931

**CULTURE ON ARTIFICIAL MEDIA**

401 Busse 1904

1427 Kamat 1933

**LIFE HISTORY, PARASITISM AND FACTORS AFFECTING**

1427 Kamat 1933

2361 Prasad 1945

**MISCELLANEOUS**

Used as food in Egypt when young 360 Britton-Jones 1922

*Sorosporium ehrenbergii* and *Tolyposporium filiferum* are synonyms 1874 Mason 1926

Distinct from *Sorosporium filiferum* 3342 Zundel 1930

Transferred to *Sorosporium* 3342 Zundel 1930

Incidence in Italian E. Africa on sorghum 425 Castellani 1940

SPORE GERMINATION AND FACTORS AFFECTING

360 Britton-Jones 1922

1427 Kamat 1933

**TOLYPOSPORIUM EHRENBERGII** (Kühn) Patouillard var.  
**GRANDIGLOBUM** Uppal and Patel Indian Jour. Agric. 13:  
520-521. 1943

MISCELLANEOUS

Technical description and comparison with species 3076 Uppal  
and Patel 1943

**TOLYPOSPORIUM GLOBULIGERUM** (Berk. and Br.) Ricker Jour.  
Mycol. 11: 112. 1905.

*Thecaphora globuligera* Berk. and Br., Trans. Linn. Soc. II. 1: 407. 1879.

*Testicularia leersiae* Cornu, Ann. Sci. Nat. VI. 15: 275. 1883. (Type from  
Algeria on *Leersia hexadra*).

*Ustilago leersiae* Durien, Cornu in Ann. Sci. Nat. VI. 15: 274. 1883. (As  
a synonym).

MISCELLANEOUS

Symptoms and morphology 1763 McAlpine 1910

**TOLYPOSPORIUM JUNC**i (Schröt.) Woronin Abh. Senck. Nat.  
Ges. 12: 577. 1882.

*Sorosporium junci* Schröt., Abh. Schles. Ges. Vat. Kult. 1869-72: 6. 1872.

LIFE HISTORY, PARASITISM AND FACTORS AFFECTING

2698 Schröter 1877

3266 Woronin 1882

647 Dietel 1897

MISCELLANEOUS

First report from North America 1338 Jackson 1920

SPORE GERMINATION AND FACTORS AFFECTING

3266 Woronin 1882

315 Brefeld 1895

2655 Schellenberg 1911

1689 Lind 1913

**TOLYPOSPORIUM KOCHIANUM** Gäumann Ber. Schweiz. Bot.  
Ges. 41: 179. 1932

MISCELLANEOUS

Morphology and symptoms 931 Gäumann 1932

SPORE GERMINATION AND FACTORS AFFECTING

931 Gäumann 1932

**TOLYPOSPORIUM LEPTIDEUM** Sydow. Ann. Mycol. 11: 365.  
1913.

LIFE HISTORY, PARASITISM AND FACTORS AFFECTING

165 Baudyš and Picbauer 1924

## SPORE GERMINATION AND FACTORS AFFECTING

165 Baudyš and Picbauer 1924

**TOLYPOSPORIUM PENICILLARIAE** Bref. Unters, Gesammt. Myk. 12: 154. 1895.

## LIFE HISTORY, PARASITISM AND FACTORS AFFECTING

315 Brefeld 1895

16 Ajrekar and Likhite 1933

218 Bhatt 1946

## MISCELLANEOUS

Morphology 315 Brefeld 1895

Identical with *Ustilago penniseti* 467 Ciferri 1931

## SPORE GERMINATION AND FACTORS AFFECTING

315 Brefeld 1895

3282 Yen 1938

**TRACYA HYDROCHARIDIS** Lagerh. In Vestergren Mic. Rar. Sel. 396. 1899. Nom. nud. Bot. Not. 1902: 175.*Doassansia reukaufii* P. Henn., Hedwigia 43: 434. 1904. (Misspelled as "Renkaufii.")

## HETEROTHALLISM AND SEX

2480 Reukauf 1906

## LIFE HISTORY, PARASITISM AND FACTORS AFFECTING

2480 Reukauf 1906

2655 Schellenberg 1911

1724 Liro 1938

## MISCELLANEOUS

Morphology and symptoms 2480 Reukauf 1906

Morphology and symptoms 2655 Schellenberg 1911

## SPORE GERMINATION AND FACTORS AFFECTING

2480 Reukauf 1906

2655 Schellenberg 1911

**TUBURCINIA PARIDIS** (Unger) Vestergren Bih. Vet.-Akad. Handl. 22 (Afd. 3): 9. 1896*Protomyces paridis* Unger, Die Exanth. 344. 1833.*Polycystis colchici* Fries, Summa veg. Scandinaviae 516. 1846.*Tuburcinia trientalis* Berk. and Br., Ann. Mag. Nat. Hist. II. 5: 464. 1850.*Polycystis opaca* Strauss, in Sturm's Deutschland Fl. 334: 47. 1857. p.p.*Tuburcinia schröteri* Wint., Hedwigia 18: 170. 1879.*Sorosporium opacum* Wint., Hedwigia 19: 3, 109. 1880. p.p.*Sorosporium paridis* Wint., Rabenh. Krypt. Fl. 102. 1881.*Tuburcinia trientalis* DeToni, Syllog. Ust. 507. 1888. p.p.

## HETEROTHALLISM AND SEX

3266 Woronin 1882 (fusion of sporidia)

## LIFE HISTORY, PARASITISM AND FACTORS AFFECTING

3266 Woronin 1882

2655 Schellenberg 1911

## MISCELLANEOUS

- Morphology and symptoms 2655 Schellenberg 1911  
 Conidial stage = *Ascomyces trientalis* Berk. 1689 Lind 1913  
 Incidence on *Trientalis latifolia* in Oregon 1338 Jackson 1920  
 Clamp connections on the mycelium 2732 Seyfert 1927  
 Type species of Ciferri's genus *Ginanniella*, emend 3069 Ulbrich 1940

## SPORE GERMINATION AND FACTORS AFFECTING

- 3266 Woronin 1882  
 2329 Plowright 1889  
 2655 Schellenberg 1911

**TUBURCINIA PRIMULICOLA** (Magnus) Bref. Unters. Gesamt.  
 Myk. 12: 180. 1897.

- Urocystis primulicola* Magnus, Verh. Bot. Prov. Brandenb. 20: 50. 1878 and  
 Hedwigia 17: 19. 1879.  
*Ginanniella primulicola* Cif., Fl. Ital. Crypt. Ust. Fasc. 17: 152. 1938.

## CYTOLOGY

- 3224 Wilson 1916

## LIFE HISTORY, PARASITISM AND FACTORS AFFECTING

- 1810 Magnus 1878  
 2316 Pirotta 1881  
 1581 Kühn 1882  
 3255 Wolley 1884  
 2704 Schröter 1887 (conidial stage)  
 497 Cocconi 1890  
 2317 Pirotta 1891  
 1585 Kühn 1892  
 315 Brefeld 1895  
 2655 Schellenberg 1911  
 1694 Lindau 1912 (conidial stage)  
 1687 Lind 1913  
 3224 Wilson 1916  
 673 Dominik 1936

## MISCELLANEOUS

- First report from France 954, 955 Godfrin 1891  
 Morphology and symptoms 2655 Schellenberg 1911  
 Conidial stage = *Paipalopsis Irmischiae* Kühn 1689 Lind 1913  
 Formation of clamp connections on the mycelium 2732 Seyfert 1927  
 Morphology and host range 1724 Liro 1938

## SPORE GERMINATION AND FACTORS AFFECTING

- 2316 Pirotta 1881  
 2329 Plowright 1889  
 497 Cocconi 1890  
 1585 Kühn 1892  
 315 Brefeld 1895

1843 Maire and Marguery 1898

2655 Schellenberg 1911

**UROCYSTIS AGROPYRI** (Preuss) Schröt. Abh. Schles. Ges. Abth. Nat. Med. 1869-72: 7. 1870.

*Uredo agropyri* Preuss, Linnaea 24: 102. 1851.

*Thecaphora occulta* Desmazieres, Pl. Crypt. France ed. III. 653. 1859.

*Urocystis preussii* Kühn, Rabenh., Fungi Europ. 1898. 1874.

*Urocystis occulta* Schlechtendal, Passerini, in Nuovo Giorn. Bot. Ital. 9: 238. 1877.

*Polycystis agropyri* Schröter, Beitr. Biol. Pflanz. (Cohn) 2: 376. 1877.

*Urocystis ulei* Magnus, Rabenh., Fungi Europ. 2390. 1878.

*Urocystis occulta* var. *tritici* Ellis, N. A. Fungi 293. 1879.

*Urocystis alopecuri* Frank, Krankheit. Pflanz. 440. 1880.

*Urocystis festucae* Ule, Verh. Bot. Ver. Prov. Brandenb. 25: 215. 1884.

*Urocystis ulei* Magnus, in Ule, Verh. Bot. Ver. Prov. Brandenb. 25: 215. 1884.

*Tuburcinia agropyri* Liro, Ann. Univ. Fenn. Aboen. A. 1: 15. 1922.

*Tuburcinia alopecuri* Liro, Ann. Univ. Fenn. Aboen. A. 1: 24. 1922.

*Tuburcinia poae* Liro, Ann. Univ. Fenn. Aboen. A. 1: 22. 1922.

*Tuburcinia elynii* Cif., Ann. Mycol. 29: 17. 1931.

*Tuburcinia avenae-elatoris* Kochman, Act. Soc. Bot. Polon. 16: 53-67. 1939.

*Urocystis poae* Padwick and Agmatulla Khan, Imp. Mycol. Inst. (New Delhi) Mycol. Papers No. 10: 2. 1944.

#### CULTURE ON ARTIFICIAL MEDIA

2973 Thirumalachar and Dickson 1948

2974 Thirumalachar and Dickson 1949

#### CYTOLOGY

2973 Thirumalachar and Dickson 1948

2974 Thirumalachar and Dickson 1949

#### HETEROTHALLISM AND SEX

2973 Thirumalachar and Dickson 1948

2974 Thirumalachar and Dickson 1949

#### HOST RANGE

786 Fischer 1942

798 Fischer and Holton 1943

#### LIFE HISTORY, PARASITISM AND FACTORS AFFECTING

2698 Schröter 1877

2704 Schröter 1887

1689 Lind 1913

1724 Liro 1938

2974 Thirumalachar and Dickson 1949

#### MISCELLANEOUS

Simultaneous occurrence with *Ustilago hypodytes* (*Ustilago spe-gazzinii*) on same plants of *Agropyron repens* 1564 Kühn 1874

Morphology and symptoms 2655 Schellenberg 1911

Comparison with *Urocystis bolivari* on *Lolium*. Grasses attacked by *Urocystis agropyri* never produce stems 380, 381 Bubak 1922

Redtop (*Agrostis alba*) new host 601 Davis 1922

Biometric segregates from 467 Ciferri 1931

Host range and morphology 1724 Liro 1938



*Urocystis avenae elatioris* may be synonym 1511 Kochman 1939  
Morphological identity with *Urocystis tritici* 786 Fischer 1942  
Further data on the synonymy with *Urocystis tritici* 788 Fischer 1943

Wheat flag smut and grass flag smut only biotypes of one morphologic species 798 Fischer and Holton 1943

Comparative pathogenicity with *Urocystis tritici* and *U. occulta* 798 Fischer and Holton 1943

Timothy (*Phleum pratense*) new host 1546 Kreitlow and Cassell 1945

Comparison (symptoms) with *Ustilago striiformis* 1545 Kreitlow 1948

#### PHYSIOLOGIC SPECIALIZATION

1724 Liro 1938

1511 Kochman 1939

798 Fischer and Holton 1943

#### SPORE GERMINATION AND FACTORS AFFECTING

2973 Thirumalachar and Dickson 1948

2974 Thirumalachar and Dickson 1949

#### UROCYSTIS ALLII Schellenb. Beitr. Krypt. Schweiz 3: 141. 1911.

*Urocystis colchici* f. *allii-subhirsuti* Beltrani, Thüm., Mycoth. Univ. 1219. 1878.

*Tubercinia allii* Liro, Ann. Univ. Fenn. Aboen. A, 1: 50. 1922.

#### MISCELLANEOUS

Morphology and symptoms 2655 Schellenberg 1911

#### UROCYSTIS ANEMONES (Pers.) Wint. Rabenh. Krypt. Fl. 1: 123. 1881.

*Uredo anemones* Pers., Tent. Disp. Method. Fung. 56. 1797.

*Uredo ranunculacearum* var. *anemones-nemorosae* DC., Fl. France 6: 75. 1815.

*Caeoma ranunculacearum* Link, in Linne Sp. Pl. 2: 23. 1825. p.p.

*Uredo ranunculacearum* Chevallier, Fl. env. Paris 399, 1826. p.p.

*Caeoma pompholygodes* Schlecht., Linnaea 1: 248. 1826.

*Erysibe arillata* var. *ranunculacearum* Wallr., Fl. Crypt. Germ. 2: 211. 1883.

*Uredo pompholygodes* Rabenh., Krypt. Fl. Handb. 1: 4. 1844.

*Polycystis pompholygodes* Lev., Ann. Sci. Nat. Bot. III, 5: 270. 1846. p.p.

*Polycystis ranunculacearum* Fries, Sum. Veg. Scand. 516. 1846.

*Polycystis anemones* Lev., Ann. Sci. Nat. III, 8: 372. 1847. p.p.

*Tubercinia anemones* Liro, Ann. Univ. Fenn. Aboen. A, 1: 55. 1922.

*Tubercinia hepaticae-trilobae* (DC.) Liro, Ann. Univ. Fenn. Aboen. A, 1: 59. 1922.

#### CULTURE ON ARTIFICIAL MEDIA

1500 Kniep 1921 (from smut spore to smut spore in culture)

#### CYTOLOGY

2231 Paravicini 1917

1500 Kniep 1921

3179 Wang 1934

## LIFE HISTORY, PARASITISM AND FACTORS AFFECTING

2329 Plowright 1889 (as *Urocystis ranunculi*)

1148 Hennings 1903

2655 Schellenberg 1911

321 Brefeld 1912

2231 Paravicini 1917

1500 Kniep 1921

1718 Liro 1922

3068 Ulbrich 1931

## MISCELLANEOUS

Morphology and symptoms 2655 Schellenberg 1911

Subdivision of *Urocystis anemones* into species on basis of host restriction 1718 Liro 1922

Clamp connections on the mycelium 2732 Seyfert 1927

Giant forms of host resulting from infection 3068 Ulbrich 1931

Host range and morphology 1724 Liro 1938

## PHYSIOLOGIC SPECIALIZATION

1862 Markova 1927

## SPORE GERMINATION AND FACTORS AFFECTING

803 Fischer v. Waldheim 1869 (as *Urocystis pompholygodes*)2329 Plowright 1889 (as *Urocystis ranunculi*)315 Brefeld 1895 (as *Urocystis ranunculi*)2655 Schellenberg 1911 (as *Urocystis ranunculi*)

2231 Paravicini 1917

1500 Kniep 1921 (as *Urocystis ranunculi*)

**UROCYSTIS BOLIVARI** Bubak and Fragoso Bull. Real Soc. Espan. Hist. Nat. 22: 205. 1922.

*Tuburcinia bolivari* Fragoso, Cif. in Nuovo Giorn. Bot. Ital. n.s. 40, 267. 1933.

## MISCELLANEOUS

Technical description and comparison with related species 380, 381 Bubak 1922

**UROCYSTIS BRASSICAE** Mundkur Phytopath. 28: 141. 1938.

## HOST RANGE

2052 Mundkur 1938

## MISCELLANEOUS

Technical description and Latin diagnosis. Comparison with *Urocystis coralloides*. 2052 Mundkur 1938

**UROCYSTIS CARCINODES** (Berk. and Curtis) Fisch. v. Waldh. Aperçu Syst. Ust. 38: 1877

*Thecaphora carcinodes* Berk. and Curtis, Grevillea 3: 58. 1874.

*Tuburcinia carcinodes* Liro, Ann. Univ. Fenn. Aboen. A, 1: 30. 1922. p.p.

## MISCELLANEOUS

Morphology and symptoms 2655 Schellenberg 1911

**UROCYSTIS CEPULAE** Frost In Farlow Ann. Rep. Sec. Mass. Board Agric. 24: App. 174. 1877.

*Urocystis colchici cepulae* Cooke, Gard. Chron. n.s. 7: 735. 1877.

*Tubercinia cepulae* Liro, Ann. Univ. Fenn. Aboen. A, 1: 47. 1922.

**CONTROL**

- 415 Capron 1870
- 2953 Taylor 1874
- 736 Farlow 1877
- 1846 Malbranche 1881
- 2712 Scribner 1890
- 2966 Thaxter 1890
- 1412 Jones 1891
- 2967 Thaxter 1891
- 2880 Sturgis 1893
- 2881 Sturgis 1896
- 1032 Halsted 1898
- 2718 Selby 1900
- 2758 Sirrine and Stewart 1900
- 2719 Selby 1902
- 2856 Stone 1909
- 2220 Pammel 1912
- 2857 Stone 1914
- 3102 Vaughan and Walker 1919
- 3162 Walker 1919
- 3163 Walker 1920
- 142 Barss 1921
- 902 Gardner 1921
- 3212 Whitehead 1921
- 985, 986 Gregory 1922
- 33 Anderson 1923
- 37 Anderson and Osmun 1923
- 3330 Zillig 1923
- 35 Anderson 1924
- 38 Anderson and Osmun 1924
- 2946 Taubenhaus and Mally 1924
- 21 Alcock *et al.* 1926
- 2616 Sands 1926
- 1007 Gussow and Conners 1927
- 1885 Matzulevitch 1936
- 323 Bremer 1936
- 944 Gibbs 1938
- 756 Felix 1939
- 2111 Nelson 1939
- 945 Gibbs *et al.* 1940
- 2121 Newhall 1940
- 758 Felix 1941

- 2122 Newhall 1944
- 2194 Osmun 1944
- 676 Doran and Sproston 1945
- 1952 Miller and McWhorter 1945
- 2112 Nelson 1946
- 1715 Linn and Newhall 1948

## CULTURE ON ARTIFICIAL MEDIA

- 32 Anderson 1921
- 3330 Zillig 1923
- 3167 Walker and Wellman 1924
- 232, 233 Blizzard 1926
- 3168 Walker and Wellman 1926

## CYTOLOGY AND SEX

- 32 Anderson 1921
- 232, 233 Blizzard 1926
- 722 Evans 1933

## HOST RANGE

- 483 Clinton 1904
- 545 Cotton 1919
- 3330 Zillig 1923
- 34 Anderson 1924
- 36 Anderson 1925

## LIFE HISTORY, PARASITISM AND FACTORS AFFECTING

- 2958 Taylor 1874
- 735, 736 Farlow 1877
- 521, 522, 523 Cooke 1877
- 524 Cooke 1879
- 539, 540 Cornu 1879
- 541 Cornu 1880
- 2966 Thaxter 1890
- 1644 Leather 1891
- 2967 Thaxter 1891
- 2881 Sturgis 1896
- 1033 Halsted 1899
- 2718 Selby 1900
- 849 Freeman 1905
- 2220 Pammel 1912
- 1350 Jagger 1918
- 32 Anderson 1921
- 3166 Walker and Jones 1921
- 3213 Whitehead 1921
- 3330 Zillig 1923
- 38 Anderson and Osmun 1924
- 2946 Taubenhaus and Mally 1924
- 232, 233 Blizzard 1926
- 2904 Szembel 1926
- 3168 Walker and Wellman 1926

1007 Güssow and Conners 1927

1505 Knott 1930

722 Evans 1933

1885 Matzulevitch 1936

944 Gibbs 1938

755 Felix 1938

# MISCELLANEOUS

Report of incidence and importance of, in U. S. 3182 Ware 1870

Identical with *Urocystis magica* 736 Farlow 1877

Probable origin 736 Farlow 1877

First report from Europe 540 Cornu 1879

Spore longevity 2966 Thaxter 1890

Historical review 2966 Thaxter 1890

Onion smut carried from one locality to another with soil or implements 1033 Halsted 1899

Morphology and symptoms 2655 Schellenberg 1911

Discovery in Great Britain 545 Cotton 1919

Budding secondary sporidia produced 3213 Whitehead 1921

History of disease 3213 Whitehead 1921

Questions on the biology and control needing clarification 3330 Zillig 1923

History of onion smut 38 Anderson and Osmun 1924

Taxonomic history 38 Anderson and Osmun 1924

*Tuburcinia* vs. *Urocystis* 38 Anderson and Osmun 1924

History and geographic distribution 2946 Taubenhaus and Mally 1924

Origin of disease in America 36 Anderson 1925

Infection occurs only at seedling stage 2904 Szembel 1926

Spores survive in soil many years in absence of host 2904 Szembel 1926

Wild onion (*Allium sabulosum*) natural host 2904 Szembel 1926

Simulation of true haustoria 722 Evans 1933

Known in Europe since 1837 1721 Liro 1934

Origin of onion smut in Europe rather than in North America 1721 Liro 1934

Method of determining number of spores in contaminated soil 1885 Matzulevitch 1936

Incidence for first time in New Zealand 944 Gibbs 1938

Host range and morphology 1724 Liro 1938

# SPORE GERMINATION AND FACTORS AFFECTING

2966 Thaxter 1890

32 Anderson 1921

3213 Whitehead 1921

3330 Zillig 1923

38 Anderson and Osmun 1924

2946 Taubenhaus and Mally 1924

3167 Walker and Wellman 1924

3168 Walker and Wellman 1926

VARIETAL RESISTANCE AND SUSCEPTIBILITY, AND INHERITANCE OF

34 Anderson 1924 (susceptibility of species)

36 Anderson 1925

757 Felix 1941

3165 Walker *et al.* 1944 (the hybrid onion *Allium fistulosum*, is source of resistance to onion smut in commercial varieties)

**UROCYSTIS COLCHICI** (Schlecht.) Rabenh. Fung. Europ. 396. 1861.

*Caeoma colchici* Schlecht., Linnaea 1: 251. 1826.

*Sporisorium colchici* Libert, Pl. Crypt. Ard. 194. 1832.

*Uredo colchici* Link, Handb. Erkennung. Gewäch. 4: 435. 1833.

*Erysibe arillata colchici* Wallr., Fl. Crypt. Germ. 2: 211. 1833.

*Polycystis pompholygodes* Lev., Ann. Sci. Nat. Bot. III, 5: 11. 1846. p.p.

*Polycystis colchici* Strauss, Sturm's Deutschland Fl. 3: 45. 1853.

*Tubercinia colchici* Liro, Ann. Univ. Fenn. Aboen. A, 1: 52. 1922.

*Tubercinia scillae* Cif., Atti R., Bot. Ist. Univ. Pavia N. S. 1: 79. 1924.

LIFE HISTORY, PARASITISM AND FACTORS AFFECTING

2370, 2371 Prillieux 1880

2655 Schellenberg 1911

1724 Liro 1938

MISCELLANEOUS

Morphology 2655 Schellenberg 1911

Host range and morphology 1724 Liro 1938

Relation to similar species 1724 Liro 1938

SPORE GERMINATION AND FACTORS AFFECTING

2370, 2371 Prillieux 1880

**UROCYSTIS CORALLOIDES** Rostr. Bot. Centralb. 5: 126. 1881.

*Tubercinia coralloides* Liro, Ann. Univ. Fenn. Aboen. A, 1: 86. 1922.

LIFE HISTORY, PARASITISM AND FACTORS AFFECTING

1775 McRae 1926

1961 Mitra 1928

2052 Mundkur 1938

MISCELLANEOUS

Morphology and symptoms 2552 Rostrup 1881

Host range 2052 Mundkur 1938

Morphology and symptoms 2052 Mundkur 1938

Proposed as new species, *Urocystis brassicae* 2052 Mundkur 1938

**UROCYSTIS FILIPENDULAE** (Tul.) Fuck. Symb. Myc. 1: 5. 1871.

*Polycystis filipendulae* Tul., Ann. Sci. Nat. Bot. IV, 2: 163. 1854.

*Uredo filipendulae* Dietrich, Archiv. Nat. Liv-Esth-Kurlands, II, 1: 278. 1859.

*Urocystis filipendulae* Schröt., Abhandl. Schles. Gesel. Vat. Cult. Abt. Nat. Med. 1869-1871: 7. 1871.

*Tubercinia filipendulae* Liro, Ann. Univ. Fenn. Aboen. A, 1: 87. 1922.

LIFE HISTORY, PARASITISM AND FACTORS AFFECTING

2698 Schröter 1877

2655 Schellenberg 1911

MISCELLANEOUS

Morphology and symptoms 2655 Schellenberg 1911

SPORE GERMINATION AND FACTORS AFFECTING

2698 Schröter 1877

315 Brefeld 1895

2655 Schellenberg 1911

**UROCYSTIS FISCHERI** Körn. Hedwigia 16: 34. 1877.

*Urocystis agropyri* Fisch. v. Waldh., Bull. Soc. Nat. Mosc. 40: 258. 1867.

*Tubercinia fischeri* Liro, Ann. Univ. Fenn. Aboen. A, 1: 29. 1922.

MISCELLANEOUS

Morphology and symptoms 2655 Schellenberg 1911

Host range and morphology 1724 Liro 1938

SPORE GERMINATION AND FACTORS AFFECTING

2329 Plowright 1889

**UROCYSTIS FRASERII** Clint. and Zundel N. A. Flora 7(12): 1018. 1939.

MISCELLANEOUS

Comparison with other stem smuts on *Stipa* and *Oryzopsis*; pathological histology; geographic distribution 790 Fischer 1945

**UROCYSTIS GALANTHI** Pape Arb. Biol. Reichsanst. f. Landw. u. Forstw. 11: 335. 1923

*Urocystis colchici* (Schlecht.) Rabenh., in Vaumler Verh. Ver. Natur. u. Heilkunde Pressburg, N. F. 7: 38-39. 1891. p.p.

*Tubercinia galanthi* Liro, Ann. Univ. Fenn. Aboen. A, 1: 39. 1922.

LIFE HISTORY, PARASITISM AND FACTORS AFFECTING

2226 Pape 1923

MISCELLANEOUS

Technical description 2226 Pape 1923

**UROCYSTIS GLADIOLI** W. G. Smith Gard. Chron. II, 6: 421. 1876.

*Tubercinia gladioli* Liro, Ann. Univ. Fenn. Aboen. A, 1: 37. 1922.

CULTURE ON ARTIFICIAL MEDIA

3197 Wernham 1938

MISCELLANEOUS

Chlamydospores formed on agar germinate same as those formed on host 3197 Wernham 1938

First report from U. S. 3197 Wernham 1938

Morphological distinction from *Papulospora gladioli*, mistaken for *Urocystis gladioli* in the U. S. 1274 Hotson 1942

Macroscopic characters 1682 Limber 1948

SPORE GERMINATION AND FACTORS AFFECTING

3197 Wernham 1938

**UROCYSTIS HEPATICAЕ-TRILOBAE (DC.) Zundel** In Ustilaginales of the World

- Uredo ranunculacearum* var. *hepaticae-trilobae* DC., Fl. France 6: 75. 1815.  
*Caeoma pompholygodes* Schlecht., Linnaea 1: 248. 1826. p.p.  
*Uredo ranunculacearum* Duby; Bot. Gall. 2: 901. 1830. p.p.  
*Erysibe arillata* var. *ranunculacearum* Wallr., Fl. Crypt. Germ. 2: 211. 1833. p.p.  
*Uredo syncocca* Kirchner, Lotus 6: 179. 1856.  
*Uredo ranunculacearum* var. *anemones-hepaticae-trilobae* Grognot, Pl. Crypt. cell. Saône-et-Loire Synop. 156. 1863.  
*Urocystis pompholygodes* Schröt., Abhandl. Schles. Ges. Naturw. Abth. 6. 1869. p.p.  
*Urocystis anemones* Wint., in Rabenh., Krypt. Fl. 1: 123. 1881. p.p.  
*Urocystis sorosporioides* Maire, Bull. Soc. Mycol. (France) 16: 72. 1900.  
*Tubercinia hepaticae-trilobae* Liro, Ann. Univ. Fenn. Aboen. A, 1: 56. 1922.  
*Tubercinia syncocca* Jørstad, Kgl. Norske Vid. Selsk. Skrift. 38: 75. 1935.

**CYTOLOGY**

1751 Lutman 1910

**LIFE HISTORY, PARASITISM AND FACTORS AFFECTING**

1148 Hennings 1903

**MISCELLANEOUS**

Host range, morphology and comparison with other related species

1724 Liro 1938

**PHYSIOLOGIC SPECIALIZATION**

1862 Markova 1927

**UROCYSTIS HORDEI (Cif.) Zundel** In, Ustilaginales of the World*Tubercinia hordei* Cif., Ann. Mycol. 29: 13. 1931.*Urocystis occulta* Auct. p.p.**MISCELLANEOUS**Comparison with *Urocystis occulta* 467 Ciferri 1931Mistaken for *Urocystis occulta* in Italy 467 Ciferri 1931

Technical description n. sp. 467 Ciferri 1931

**UROCYSTIS JUNCИ Lagerh.** Bot. Notiser 1888: 201.*Tubercinia junci* Liro, Ann. Univ. Fenn. Aboen. A, 1: 33. 1922.**MISCELLANEOUS**

Morphology 2655 Schellenberg 1911

**UROCYSTIS LUZULAE (Schröt.) Wint.** Rabenh. Krypt. Fl. 1: 120. 1881.*Polycystis luzulae* Schröt., Beitr. Biol. Pflanz. (Cohn) 2: 380. 1877.*Tubercinia luzulae* Liro, Ann. Univ. Fenn. Aboen. A, 1: 36. 1922.**MISCELLANEOUS**

Morphology 2655 Schellenberg 1911

**UROCYSTIS MIYABEANA** Togashi and Onuma Japanese Jour. Bot. 5: 25. 1930.**MISCELLANEOUS**Comparison with *Urocystis colchici*, *U. jaapiana* and *U. trillii*  
3023 Togashi and Onuma 1930



**UROCYSTIS OCCULTA** (Wallr.) Rabenh. Klotzsch-Rabenh. Herb. Mycol. ed. II. 393. 1865.

*Erysibe occulta* Wallr., Fl. Crypt Germ. 2: 212. 1833.

*Uredo parallela* Berk., Hooker in Engl. Fl. 5: 375. 1836.

*Ustilago occulta* (Wallr.) Rabenh., Klotzschii Herb. Viv. Myc. 1898; Rab. Handb. 1: 4. 1844.

*Uredo occulta* Rabenh., Krypt. Fl. 1: 4. 1844.

*Polycystis pomphologodes* Lev., Ann. Sci. Nat. III, 5: 270. 1846. p.p.

*Polycystis parallela* Britton and Brown, Ann. Mag. Nat. Hist. II, 5: 464. 1850.

*Polycystis occulta* Schlecht., Bot. Ztg. 10: 602. 1852.

*Urocystis parallela* Fisch. v. Waldh., Jahrb. Wiss. Bot. (Pringsheim) 7: 107. 1870.

*Tubercinia occulta* Liro, Ann. Univ. Fenn. Aboen. A, 1: 12. 1922.

**CULTURE ON ARTIFICIAL MEDIA**

1709 Ling 1940

**CONTROL**

1364 Jensen 1888

2896 Swingle 1898

2011 Mortensen 1910

2012 Mortensen *et al.* 1910

2013 Mortensen *et al.* 1911

2413 Ravn 1912

1730 Ljung 1913

2033 Müller and Molz 1914

2818 Stakman and Levine 1916

211 Bessey and Makemson 1918

1143 Henning 1919

1144 Henning 1922

2063 Müller and Molz 1922

2816 Stakman and Lambert 1923

1007 Güssow and Conners 1927

3114 Verona 1927

130 Baldrati 1928

971 Gram 1928

973 Gram 1929

1863 Marshner 1931

278 Borghardt 1932

1656 Leszczenko 1932

1651 Lepik 1933

1704 Lindfors 1934

1657 Leszczenko 1935

1658 Leszczenko 1938

**CYTOLOGY**

2807 Stakman *et al.* 1934

2820 Stakman *et al.* 1934

**HOST RANGE**

786 Fischer 1942 (grass hosts)

798 Fischer and Holton 1943

## LIFE HISTORY, PARASITISM AND FACTORS AFFECTING

- 1929 Meyen 1841  
 1557 Kühn 1859  
 3251 Wolff 1873  
 3252 Wolff 1874  
 1364 Jensen 1888  
 990 Grenfell 1901  
 1124 Hecke 1907 (infection of vegetative parts)  
 1271 Hori 1907  
 2818 Stakman and Levine 1916  
 211 Bessey and Makemson 1918  
 2674 Schlumberger 1920  
 2820 Stakman *et al.* 1934  
 3134 Vilkaitis 1936  
 1711 Ling and Moore 1937  
 1709 Ling 1940  
 1710 Ling 1941

## MISCELLANEOUS

- Infection of freshly cut vegetative tissues of *Secale montanum*  
 1124 Hecke 1907  
 Illness developed from threshing infected rye 1689 Lind 1913  
 Analysis of changes induced in infected plants 2674 Schlumberger 1920  
 Comparison with *Urocystis bolivari* on *Lolium* 381 Bubak 1922  
 Incidence in Russia 2751 Sigriansky 1925  
 Incidence in Italy 130 Baldrati 1928  
 First report from S. Africa 3117 Verwoerd 1929  
 Biometric segregates from 467 Ciferri 1931  
 Comparison with *Urocystis hordei* 467 Ciferri 1931  
 In Germany in 1929 1863 Marschner 1931  
 Supposed infection of wheat really due to *Urocystis tritici*. Comparison with *U. tritici* 224 Biraghi 1933  
 Smutted culms much shorter than the healthy ones due to shortening of nodes 3134 Vilkaitis 1936  
 Case of respiratory allergy 3248 Wittich and Stakman 1937  
 Host range and morphology 1724 Liro 1938  
 First report from Switzerland 3148 Volkart 1939  
 As cause of hay fever and asthma 3246 Wittich 1939  
 Histology of infection of resistant and susceptible varieties 1709 Ling 1940  
 Relationship to *Urocystis tritici* and *U. agropyri* 788 Fischer 1943  
 Comparative pathogenicity with *Urocystis agropyri* and *U. tritici* 798 Fischer and Holton 1943  
 Relationship to *Urocystis agropyri* and *U. tritici*. Cross inoculations. 798 Fischer and Holton 1943

## SPORE GERMINATION AND FACTORS AFFECTING

- 1557 Kühn 1859

- 3251 Wolff 1873
- 3252 Wolff 1874
- 315 Brefeld 1895
- 1072 Harper 1898
- 1763 McAlpine 1910
- 2655 Schellenberg 1911
- 2818 Stakman and Levine 1916
- 2820 Stakman *et al.* 1934
- 1708 Ling 1940

**UROCYSTIS ORNITHOGALI** Körn. Fisch. v. Waldh., Apercu Syst. Ustil. 41. 1877.

- Urocystis hypogaea* Körn., Fuckel in Symb. Myc. 3: 9. 1876.
- Tubercinia ornithogali* Liro, Ann. Univ. Fenn. A, 1: 45. 1922.

**MISCELLANEOUS**

- Morphology and symptoms 2655 Schellenberg 1911
- Host range and morphology 1724 Liro 1938

**UROCYSTIS RANUNCULI-AURICOMI** (Liro) Zundel In, Ustilaginales of the World

- Uredo ranunculacearum* Dietrich, Liv., -u Kur. II, 1: 278. 1856. p.p.
- Urocystis pompholygodes* Rabenh., in Fisch. v. Waldh. Apercu Syst. Ustil. 40: 1877. p.p.
- Urocystis anemones* var. *irregularis* Juel, Oversigt. Sv.-Vet.-Akad. Forh. 1894: 496. p.p.
- Tubercinia ranunculi-auricom* Liro, Ann. Univ. Fenn. Aboen. A, 1: 73. 1922.

**MISCELLANEOUS**

- Hosts, morphology and related forms 1724 Liro 1938

**SPORE GERMINATION AND FACTORS AFFECTING**

- 1724 Liro 1938

**UROCYSTIS SOROSPORIOIDES** Körn. in Fuck., Symb. Myc. 3: 10. 1875.

- Tubercinia sorosporioides* Liro, Ann. Univ. Fenn. Aboen. A, 1: 77. 1922.
- Tubercinia aquilegiae* Cif., Ann. Mycol. 29: 28. 1931.

**LIFE HISTORY, PARASITISM AND FACTORS AFFECTING**

- 2655 Schellenberg 1911

**MISCELLANEOUS**

- Morphology and symptoms 2655 Schellenberg 1911
- Host range and morphology 1724 Liro 1938
- First report from India 2051 Mundkur 1938

**UROCYSTIS TRITICI** Körn. Hedwigia 16: 33. 1877.

- Tubercinia tritici* Liro, Ann. Univ. Fenn. Aboen. A, 1: 17. 1922.

**CONTROL**

- 1763 McAlpine 1910
- 2368 Pridham 1913
- 585 Darnell-Smith 1914

- 588 Darnell-Smith and Ross 1919  
2381 Putterill 1920  
1035 Hamblin 1921  
124 Baker 1923  
3006, 3007 Tisdale *et al.* 1923  
1007 Gussow and Conners 1927  
3013 Tisdale *et al.* 1927  
3117 Verwoerd 1929  
2014 Morwood 1930  
2015 Morwood 1931  
2279 Petit 1933  
43 Angell 1934  
613 Dawson 1934  
2281 Petit 1935  
1409 Jones and El Nasr 1938  
2290 Petit 1939  
1410, 1411 Jones and El Nasr 1940
- CULTURE ON ARTIFICIAL MEDIA  
3268 Wu 1949
- CYTOLOGY  
2152 Noble 1924  
224 Biraghi 1934  
460 Churchward 1934
- HOST RANGE  
786 Fischer 1942  
798 Fischer and Holton 1943
- LIFE HISTORY, PARASITISM AND FACTORS AFFECTING  
1763 McAlpine 1910  
2249 Peacock 1913  
2368 Pridham 1913  
585 Darnell-Smith 1914  
357 Brittlebank 1920  
2381 Putterill 1920  
1035 Hamblin 1921  
124 Baker 1923  
2150 Noble 1923  
3006, 3007 Tisdale *et al.* 1923  
418 Carne 1924  
995, 996 Griffiths 1924  
2152 Noble 1924  
3013 Tisdale *et al.* 1927  
835 Forster and Vasey 1929  
3117 Verwoerd 1929  
1358 Jarret 1932  
731 Faris 1933  
932 Geach 1933 (combined action with *Fusarium culmorum* on  
the occurrence of seedling blight)

- 42 Angell 1934
- 460 Churchward 1934
- 536 Corneli 1934
- 613 Dawson 1934
- 1953 Miller and Millikan 1934
- 45 Angell *et al.* 1937
- 1956 Millikan and Sims 1937
- 44 Angell *et al.* 1938
- 1409 Jones and El Nasr 1938
- 1954, 1955 Millikan 1939
- 1410, 1411 Jones and El Nasr 1940
- 697 El-Helaly 1948
- 3268 Wu 1949

LONGEVITY OF SPORES

- 995 Griffiths 1924
- 3117 Verwoerd 1929
- 2153 Noble 1934

MISCELLANEOUS

- Considered same as *Urocystis occulta* 3251 Wolff 1873
- Separation from *Urocystis occulta* as a distinct species on wheat and morphologically distinct from *U. occulta* 1523 Körnicke 1877
- Incidence in Australia 489 Cobb 1891
- Incidence in Japan 1267 Hori 1901
- Incidence in Australia (under name *Urocystis occulta*) 1756 McAlpine 1905
- Incidence in Japan 1271 Hori 1907
- Comparison with flag smut of rye in symptoms produced 1763 McAlpine 1910
- Historical background 1763 McAlpine 1910
- Spores viable after passage through alimentary tract of horses and cattle 1763 McAlpine 1910
- Substantiation of Körnicke's establishment of *Urocystis tritici* as distinct from *U. occulta*, on basis of cross-inoculation experiments 1763 McAlpine 1910
- Incidence of flag smut in crop that was first crop in seven years on same land 1767 McDiarmid 1912
- First report from United States 1293 Humphrey and Johnson 1919
- Serious incidence in Victoria, Australia 357 Brittlebank 1920
- Introduced into United States from Australia 358 Brittlebank 1921
- Spores viable after passage through alimentary tract of horses and cattle 1035 Hamblin 1921
- Incidence in South Africa 124 Baker 1923
- Considerable crop loss in New South Wales in 1922 146 Bartlett 1923
- Probably introduced from Australia 3007 Tisdale *et al.* 1923

- Incidence in Australia and losses from, 418 Carne 1924  
 Distribution over the world 995 Griffiths 1924  
 Sporulation 29 days after inoculation 2152 Noble 1924  
 Spread in New South Wales by feeding horses straw of infected wheat 477 Clayton 1925  
 Incidence of and importance in Australia 422 Carne and Limbourn 1927  
 Manurial treatment increases infection 835 Forster and Vasey 1929  
 Can live in soil for at least four years 3117 Verwoerd 1929  
 No adverse effects on chickens 3117 Verwoerd 1929  
 Prevalence in South Africa 3117 Verwoerd 1929  
 Soils with high moisture content favorable to disease 3117 Verwoerd 1929  
 Spores viable after passage through alimentary tract of domestic animals 3117 Verwoerd 1929  
 Inoculation methods 1358 Jarrett 1932  
 Comparison with *Urocystis occulta* 224 Biraghi 1933  
 Incidence in Italy mistaken for *Urocystis occulta* 224 Biraghi 1933  
 Predisposes to seedling blight (*Fusarium culmorum*) 932 Geach 1933  
 Predisposes to seedling blight (*Fusarium* spp.) 42 Angell 1934  
 Recognition of infection by deformation of seedlings 42, 43 Angell 1934  
 Necrotic spots on inoculated seedlings as evidence of infection 460 Churchward 1934  
 First report from Cyprus 2090 Natrass 1934  
 Serious incidence in Transcaucasia 2906 Szembel 1934  
 Life history and control in Tasmania 217 Bevin 1936  
 Significantly reduced development of infected plants 44, 45 Angell *et al.* 1937, 1938  
 Geographic distribution 1724 Liro 1938  
 First report from Washington 1112 Heald and Holton 1940  
 Extent of incidence in Egypt 1410 Jones and El Nasr 1940  
 Morphologically indistinct from and therefore synonymous with *Urocystis agropyri* 788 Fischer 1943  
 Comparative pathogenicity with *Urocystis agropyri* and *U. occulta* 798 Fischer and Holton 1943  
 Pathogenic relationship to *Urocystis agropyri* 798 Fischer and Holton 1943  
 Imported from United States on straw used as packing for laboratory glassware into Palestine 1958 Minz 1943  
 First report from Mexico 279 Borlaug *et al.* 1946  
 First report from Palestine 2419 Rayss and Zwirn 1946  
 Geographic distribution 2419 Rayss and Zwirn 1946

PHYSIOLOGIC SPECIALIZATION

- 3117 Verwoerd 1929
- 3298 Yu *et al.* 1936
- 2205 Pal and Mundkur 1941
- 1254 Holton and Johnson 1943
- 3299 Yu *et al.* 1945

SPORE GERMINATION AND FACTORS AFFECTING

- 1763 McAlpine 1910
- 124 Baker 1923
- 2150 Noble 1923
- 995 Griffiths 1924
- 2152 Noble 1924
- 3117 Verwoerd 1929
- 225 Biraghi 1934
- 1953 Miller and Millikan 1934

VARIETAL RESISTANCE AND SUSCEPTIBILITY, AND INHERITANCE OF

- 2368 Pridham 1913
- 2452 Reed and Duncan 1920
- 3006, 3007 Tisdale *et al.* 1923
- 995, 996 Griffiths 1924
- 2954 Tehon 1924
- 3117 Verwoerd 1929
- 2014 Morwood 1930
- 2369 Pridham and Dwyer 1930
- 1686 Limbourn 1931
- 2015 Morwood 1931
- 3292 Yu and Chen 1931
- 1358 Jarrett 1932
- 3293 Yu *et al.* 1933
- 536 Corneli 1934
- 1953 Miller and Millikan 1934
- 2743 Shen 1934
- 3296 Yu *et al.* 1934
- 3298 Yu *et al.* 1936
- 1956 Millikan and Sims 1937
- 2205 Pal and Mundkur 1941
- 3299 Yu *et al.* 1945
- 697 El-Helaly 1948

**UROCYSTIS VIOLAE** (Sow.) Fisch. v. Waldh. Bull. Soc. Nat. Mose.  
40: 258. 1867.

*Granularia violae* Sow., Engl. Fungi pl. 440. 1815.

*Uredo vesicaria* Kalfuss, Kunze and Schmidt, Myk. 1: 67. 1817.

*Erysibe arillata violarum* Wallr., Fl. Germ. 2: 211. 1833.

*Uredo violarum* Berk., in Hooker, Engl. Fl. 5: 380. 1838. p.p.

*Polycystis violae* Britton and Brown, Ann. Mag. Hist. Nat. II. 5: 464. 1850.

*Sorosporium schizocaulon* var. *violae* Casp., Klotzsch-Rabenh. Herb. Mycol.  
Ed. Nova. 190. 1855.

*Urocystis vesicaria* Brochm., Arch. ver. Freunde Nat. (Mecklenburg) 17: 233. 1863.

*Tubercinia violae* Liro, Ann. Univ. Fenn. A. 1: 91. 1922.

#### CONTROL

1552 Krüger and Rörig 1908

#### CYTOLOGY

579 Dangeard 1892

2231 Paravicini 1917

2414 Rawitscher 1922

#### HETEROTHALLISM AND SEX

2231 Paravicini 1917 (sporidial fusions)

#### LIFE HISTORY, PARASITISM AND FACTORS AFFECTING

1573 Kühn 1876

2370 Prillieux 1880

2575 Roumeguerre 1885

579 Dangeard 1892

3159 Wakker 1892

315 Brefeld 1895

1976 Molliard 1902

2093 Naumann 1905

2655 Schellenberg 1911

2227 Pape 1925 (seed transmission)

#### MISCELLANEOUS

Pathological histology 579 Dangeard 1892

Pathological morphology and histology 3159 Wakker 1892

Morphology and symptoms 315 Brefeld 1895

Morphology and symptoms 1976 Molliard 1902

Morphology and symptoms 2655 Schellenberg 1911

Seed transmission 2227 Pape 1925

Hosts and morphology 1724 Liro 1938

#### SPORE GERMINATION AND FACTORS AFFECTING

1573 Kühn 1876

2370 Prillieux 1880

2389 Plowright 1889

579 Dangeard 1892

315 Brefeld 1895

2655 Schellenberg 1911

2231 Paravicini 1917

2414 Rawitscher 1922 (including cytology)

#### USTACYSTIS WALDSTEINIAE (Peck) Zundel Mycologia 37: 796. 1945

*Urocystis waldsteiniae* Peck, Ann. Rep. N. Y. State Mus. 46: 112. 1893.

*Ustilago waldsteiniae* Paz., in Rabenh.-Wint.-Paz., Fungi Europ. 4011. 1895.

*Urocystis gei* Ell. and Ev., Bull. Torr. Bot. Club 27: 572. 1900.

*Wheatelia waldsteiniae* (Peck) Zundel, Mycologia 37: 371. 1945.

#### CYTOLOGY

1070 Hanson and Atkinson 1938



**USTILAGO ADOXAE** Bref. Untersuch. Gesammt. Myk. 12: 119. 1895.

## CULTURE ON ARTIFICIAL MEDIA

315 Brefeld 1895

## LIFE HISTORY, PARASITISM AND FACTORS AFFECTING

315 Brefeld 1895

## MISCELLANEOUS

Morphology 315 Brefeld 1895

## SPORE GERMINATION AND FACTORS AFFECTING

315 Brefeld 1895

**USTILAGO AIRAE-CAESPITOSAE** (Lindr.) Liro Ann. Acad. Sci. Fenn. A. 17: 71. 1924*Tilletia striaeformis* Calkoen, Ured. en Ustil. Nederl. 135. 1883. p.p.*Tilletia striaeformis* Rostr., Bot. Foren. Fest. 1890: 148.*Tilletia airae-caespitosae* Lindr., Acta Soc. F. F. Fenn. 26: 15. 1904.

## LIFE HISTORY, PARASITISM AND FACTORS AFFECTING

1720 Liro 1924

## MISCELLANEOUS

History and morphology 1720 Liro 1924

## PHYSIOLOGIC SPECIALIZATION

1720 Liro 1924

**USTILAGO ANDROPOGONIS-TUBERCULATA** Bref. Unters. Gesammt. Myk. 12: 108. 1895

## CULTURE ON ARTIFICIAL MEDIA

315 Brefeld 1895

## MISCELLANEOUS

Morphology 315 Brefeld 1895

## SPORE GERMINATION AND FACTORS AFFECTING

315 Brefeld 1895

**USTILAGO ANOMALA** J. Kunze. (Fungi Sci. Exs. 23: hyponym 1877); Wint. in Rabenh. Krypt. Fl. 1: 100. 1881.*Ustilago pallida* Schröt. in Fisch. v. Waldh., Aperçu Syst. Ust. 30. May 1877.*Ustilago carnea* Liro, Ann. Soc. zool-bot. Fenn. Venamo 1: 27. 1921.*Ustilago muricata* Liro, Ann. Acad. Sci. Fenn. Ser. A. 17: 238. 1924.*Ustilago persicariae* Cif., Ann. Mycol. 29: 41. 1931.

## CULTURE ON ARTIFICIAL MEDIA

1501 Kniep 1926

## HETEROTHALLISM AND SEX

2559 Rostrup 1890 (sporidia fuse)

315 Brefeld 1895 (fusion of sporidia)

2655 Schellenberg 1911 (sporidia do not fuse)

1720 Liro 1924

1501 Kniep 1926

## HYBRIDIZATION AND GENETICS

1501 Kniep 1926 (sporidial fusions with other species)

## LIFE HISTORY, PARASITISM AND FACTORS AFFECTING

2655 Schellenberg 1911

321 Brefeld 1912

1720 Liro 1924

## MISCELLANEOUS

Infected plants of *Polygonum dumetorum* immune from rust, *Puccinia mamillata* 1034 Halsted 1899

*Ustilago muricata* Liro and *U. persicariae* Cif. are synonyms 1213 Hirschhorn 1947

Variety *carnea* proposed, based on *Ustilago carnea* Liro 1213 Hirschhorn 1947

*Polygonum dumetorum* var. *apterum* Saelan is merely the morphologically modified plants of *Polygonum dumetorum* due to the smut 1717 Liro 1921

## PHYSIOLOGIC SPECIALIZATION

1720 Liro 1924 (including the synonymous species, *Ustilago carnea*)

## SPORE GERMINATION AND FACTORS AFFECTING

2698 Schröter 1877

2559 Rostrup 1890

315 Brefeld 1895

2655 Schellenberg 1911

**USTILAGO ARABIS-ALPINAE** Liro Ann. Acad. Sci. Fenn. A. 42: 507. 1938

## LIFE HISTORY, PARASITISM AND FACTORS AFFECTING

1724 Liro 1938

## MISCELLANEOUS

Morphology and symptoms 1724 Liro 1938

**USTILAGO ARTHURII** Hume Proc. Iowa Acad. Sci. 9: 233. 1902.

*Ustilago scolochloae* Griff., Bull. Torr. Bot. Club 31: 86. 1904.

## MISCELLANEOUS

At least 50 per cent infection on *Scolochloa festucae* in southeast Oregon 993 Griffiths 1903

**USTILAGO AVENAE** (Pers.) Rostr. Overs. K. Danske Vid. Selsk. Forh. 1890: 13. March, 1890.

*Reticularia segetum* Builliard, Hist. Champ., 1791: 90. pl. 472, fig. II. p.p.

*Uredo segetum* sub. sp. *avenae* Pers., Syn. Fungi. 224. 1801.

*Uredo carbo* var. *avenae* DC., Fl. Fr. 6: 76. 1815.

*Ustilago segetum* Link, Ditmar in Sturm's Deutsch. Fl. III, 1: 67. 1817. p.p.

*Caeoma segetum* Link, in Willdenow, Sp. Pl. 6: 62. 1825. p.p.

*Erysibe vera* var. *avenae* Wallr., Fl. Crypt. Germ. 2: 217. 1833. p.p.

*Uredo carbo-avenae* Phillipar, Meni. Soc. Roy. Agric. Arts Seine-et-Oise 37: 194. 1837.

*Uredo avenae* Corda, Oekonom., Neuigk. und Verh. 1846: 486.

*Uredo carbo-vulgaris avenae* Tul., Ann. Sci. Nat. Bot. III. 7: 80. 1847.

*Ustilago segetum* var. *avenae* Jensen, Jour. Roy. Agric. Soc. England II. 24. 407. 1888. (nom, nud.)

*Ustilago segetum* var. *avenae* Jensen, Charb. Cereales 4. 1889. (nom. nud.)

*Ustilago avenae* (Persoon) Jensen, in Kellerman and Swingle, Ann. Rept. Kans. Agric. Expt. Sta. 2: 215. June, 1890.

*Ustilago avenae* f. *follicicola* Almeida, Revista Agron. (Lisbon) 1: 20. 1903.

# CONTROL

1447 Kellerman and Swingle 1890

489 Cobb 1891

2223 Pammel and Stewart 1893

263 Bolley 1897

487 Close 1897

2541, 2542 Rommetin 1902

1390, 1391 Johnson 1902

2543 Rommetin 1903

61 Appel and Gassner 1906

2411 Raum 1908

2386 Quanjer and Botjes 1915

1901 Melchers 1916

1186 Hiltner and Lang 1922

1278 Howitt 1922

1279 Howitt and Stone 1922

2307 Pickler and Wober 1922 (use of ultra-violet, X-ray and radium)

641 Dickson *et al.* 1923

1280 Howitt and Stone 1923

1837 Mahner 1923

2504 Ritzema 1923

2602 Sampson 1923

2816 Stakman and Lambert 1923

642 Dickson *et al.* 1924

909 Gassner 1924

1281 Howitt and Stone 1924

3303 Zade 1924

639 Dickson 1925

644 Diehl 1925

2324 Plaut 1925

2760 Skaskin 1925

1659 Leukel 1926

2546 Rosch 1926

703 Englisch 1927

711 Esdorn 1927

1007 Gussow and Conners 1927

2400 Raeder and Hungerford 1927

2638 Sayre and Thomas 1927

2914 Tamme 1927

868 Fromme 1928

2639, 2640 Sayre and Thomas 1928

973 Gram 1929

- 1526 Kosterz 1929  
2312 Pierstorff and Sayre 1929  
2637 Sayre 1929  
1429 Karns 1930  
2959 Terenyi 1930  
10 Abramoff 1931  
2278 Petit 1932  
2920 Tapke 1932  
1771 McKay 1933  
2279 Petit 1933  
3287 Young and McClelland 1933  
1704 Lindfors 1934  
1657 Leszczenko 1935  
2018 Morwood 1935  
2280, 2281 Petit 1935  
2304 Pichler 1935  
2305 Pichler 1936  
2506 Rivier 1936  
2507 Rivier 1938  
3288 Young and McClelland 1940  
983 Greaney and Wallace 1943  
2409 Rapin 1947

## CULTURE ON ARTIFICIAL MEDIA

- 69 Appel and Riehm 1911  
821 Fleroff 1923  
2517 Rodenhiser 1928  
1235 Holton 1931  
1313 Hüttig 1931  
2124 Nicolaisen 1934  
2340 Popp and Hanna 1935  
2444 Reed 1936  
2614 Sampson and Western 1938  
2690 Schopfer and Blumer 1938 (auxo-autotrophic)  
3079 Utter 1938  
1433 Keil 1940

## CYTOLOGY

- 2231 Paravicini 1917  
821 Fleroff 1923  
76 Arland 1924  
1459 Kharbush 1927  
1516 Kolk 1930 (cytology of mycelium in host)  
1313 Hüttig 1931  
1236 Holton 1932  
1314 Hüttig 1933  
2124 Nicolaisen 1934

## HETEROTHALLISM AND SEX

- 2231 Paravicini 1917 (copulation between promycelial cells)

- 1050 Hanna and Popp 1930
- 1054 Hanna and Popp 1931
- 1235 Holton 1931
- 1313 Hüttig 1931
- 1236 Holton 1932
- 159 Bauch 1934
- 2124 Nicolaisen 1934
- 2340 Popp and Hanna 1935
- 1241 Holton 1936
- 3208 Western 1937

## HYBRIDIZATION AND GENETICS

- 1050 Hanna and Popp 1930
- 1235 Holton 1931
- 1238 Holton 1933
- 2124 Nicolaisen 1934
- 1236 Holton 1935
- 2340 Popp and Hanna 1935 (with *Ustilago kolleri*)
- 1240, 1241 Holton 1936 (with buff smut and *Ustilago kolleri*)
- 24 Allison 1937
- 2614 Sampson and Western 1938
- 3079 Utter 1938 (with *Ustilago kolleri*)
- 797 Fischer and Holton 1941 (inheritance of sorus characters in *avenae* × *perennans*)
- 1244 Holton 1941
- 1251 Holton and Fischer 1941 (cross with *Ustilago perennans*)
- 159 Bauch 1934 (sporidial fusions with multipolar-species)

## LIFE HISTORY, PARASITISM AND FACTORS AFFECTING

- 1557 Kühn 1859
- 1226 Hoffman 1866
- 3251 Wolff 1873
- 1562 Kühn 1874
- 311 Brefeld 1883
- 1363 Jensen 1888
- 1447, 1449 Kellerman and Swingle 1890
- 314 Brefeld 1895
- 1158 Herzberg 1895
- 1413 Jones 1896
- 3046 Tubeuf 1897
- 479 Clinton 1900
- 2412 Ravn 1901
- 3047 Tubeuf 1901
- 3051 Tubeuf 1902
- 2547 Rose 1903
- 1175 Hiltner 1907
- 707 Eriksson 1908
- 724 Falck 1908 (first demonstration of formation of dormant mycelium in seed hulls)

- 1751 Lutman 1910  
1763 McAlpine 1910  
1615 Lang 1913  
3301 Zade 1922 (second demonstration of "blossom" infection  
and establishment of resting mycelium as source of infection)  
145 Bartholomew and Jones 1923 (influence of soil temperature  
and moisture on infection)  
821 Fleroff 1923  
76 Arland 1924  
3303 Zade 1924  
546 Coulson and Lods 1925 (heavier percentage of infection re-  
sults from smaller seed)  
644 Diehl 1925  
2163, 2164 Novopokrovsky and Skaskin 1925 (effect of tempera-  
ture on germination of spores)  
2546 Rosch 1926  
711 Esdorn 1927  
874 Gage 1927  
1394 Johnson 1927 (soil moisture, temperature and dehulling)  
1973 Moldenhauer 1927  
2914 Tamme 1927  
2606 Sampson 1929  
1516 Kolk 1930  
2123 Nicolaisen 1931  
77 Arland 1932  
3301 Zade and Arland 1933  
2124 Nicolaisen 1934  
1772 McKay 1936  
2445 Reed 1936 (no influence of rate of growth of host on the  
development of smut)  
2925 Tapke 1936  
3207 Western 1936  
24 Allison 1937  
296 Brandwein 1937  
1489 Kitunen 1937  
1649 Leitzke 1937  
297 Brandwein 1938  
2446 Reed 1938 (no influence of rate of growth of host on the  
development of smut)  
2614 Sampson and Western 1938  
3306, 3307 Zade 1939  
2451 Reed 1942
- LONGEVITY OF SPORES
- 1678 von Liebenberg 1879  
1361 Jensen 1887  
2412 Ravn 1901  
2605 Sampson 1928

## MISCELLANEOUS

- Oat smut segregated from *Ustilago carbo* (*U. segetum*) as *U. avenae*. No distinction made from *Ustilago kolleri*, as yet unrecognized 1367 Jensen 1889
- Covered smut recognized as distinct from loose smut and described as variety *Ustilago avenae* var. *levis* 1447 Kellerman and Swingle 1890
- Early history 1447 Kellerman and Swingle 1890
- Fusarium ustilaginis* K. & S. parasitic on, 1447 Kellerman and Swingle 1890
- Good history of seed treatment for smut 1447 Kellerman and Swingle 1890
- Macrosporium utile* parasitic on 1447 Kellerman and Swingle 1890
- Three species of beetles (*Phalacrus* and *Brachytorsus* spp.) which feed on 1447 Kellerman and Swingle 1890
- Sporulation in anthers of host 1357 Japp 1907
- Effect of ultra-violet and X-rays and radium on germinability of spores 2307 Pichler and Wober 1922
- Sporulation in leaves 145 Bartholomew and Jones 1923
- Chlamydospores produced in culture 821 Fleroff 1923
- Morphological abnormalities induced in *Avena ludoviciana* 2912 Talieff and Grigorovitch 1923
- Symptoms, morphology and taxonomic position 76 Arland 1924
- Sporulation in leaves 2455 Reed *et al.* 1925
- Rapid testing of efficacy of disinfectants 2545 Rosch 1926
- Closely similar to but not identical with *Ustilago perennans* 2546 Rosch 1926
- Incidence in Ireland 2079 Murphy 1927
- Inoculation methods 2914 Tamme 1927
- Effect of fertilizers on incidence of 1526 Kosterz 1929
- Seedlings from small seed more susceptible than those from large seed 1738 Lods and Coulson 1929
- Partial vacuum method of inoculation 1013 Haaring 1930
- Use of evacuation method of inoculation for laboratory testing of fungicides 1014 Haaring 1930
- Distribution of mycelium in seedlings of various ages 1516 Kolk 1930
- One hundred per cent infection from dry spore dusting of dehulled seed 1516 Kolk 1930
- Relation of host and pathogene 1516 Kolk 1930
- On wild oats, *Avena fatua* 2754 Simmonds 1930
- Copper adsorption by spores 2959 Terenyi 1930
- Sex segregated independently of cultural characters 1313 Hüttig 1931
- Temperature influences type of germination and segregation for sex and other characters 1313 Hüttig 1931

- Chemical composition of spores 412 Campanile 1932  
Effect on rust development 3196 Welsh 1932  
Effect of smut infection on height and tillering 3196 Welsh 1932  
Morphological responses of host 3196 Welsh 1932  
Smut-infected plants more susceptible to crown rust 3196 Welsh 1932  
Injurious effects of latent infection 3305 Zade 1932  
Effect of physical and chemical factors on time of reduction division 1315 Hüttig 1933  
Buff smut and crosses with *Ustilago avenae* and *U. kolleri* 1238 Holton 1933  
Macroscopic morphologic differences between *Ustilago avenae* and *U. kolleri* 1468 Kingsley 1933  
Defense of their evacuation method of inoculating 3308 Zade and Arland 1933  
Inoculation methods 3308 Zade and Arland 1933  
Necrotic spots on inoculated seedlings as evidence of infection 460 Churchward 1934  
Fresh spores germinate less readily than those kept at room temperature for several days 704 Enomoto 1934  
Stimulatory effects of ether 704 Enomoto 1934  
Most herbarium specimens at Pusa labelled *Ustilago avenae* were *U. kolleri* 2048 Mundkur 1934  
Natural hybridization with *Ustilago kolleri* 2142 Nieves 1934  
Inoculation with sporidial cultures 2124 Nicolaisen 1934  
Occurrence of sori in leaves 2049 Mundkur 1935  
Inoculation with sporidial cultures 2125 Nicolaisen 1935  
Longevity of spores; at least 13 years 779 Fischer 1936  
Fresh spores germinate less freely 1737 Lobik and Dahlstrom 1936  
Sporulation in leaves; high per cent in field 1772 McKay 1936  
Ungerminated spores rather than resting mycelium considered source of infection 1772 McKay 1936  
Rate of growth of host has almost no effect on development of smut 2445 Reed 1936  
Influence of dehulling on the per cent smut resulting from naturally infected seed 2925 Tapke 1936  
Five grades of parasitism in resistant varieties 3207 Western 1936  
Latent infection not harmful to host. Cytology of latent infection 296 Brandwein 1937  
Comparative importance of spores and dormant mycelium in oat hulls as sources of infection 1489 Kitunen 1937  
Effect of using spore mixtures 1649 Leitzke 1937  
Case of respiratory allergy 3248 Wittich and Stakman 1937  
Serological studies 172 Beck 1938  
Comparative effectiveness of various inoculation methods 1674 Leukel *et al.* 1938



Rate of growth of host has almost no effect on development of smut 2446 Reed 1938

Growth factors 2690 Schopfer and Blumer 1938

Per cent smut reduced by vernalization of oat seed 2949 Taylor and Coffman 1938

Host specialized races not distinguishable by cultural characters 3079 Utter 1938

Build-up of pathogenicity by successive culturing on same host 3099 Vaughan 1938

As cause of hay fever and asthma 3246 Wittich 1939

Partial vacuum method of inoculation 3306, 3307 Zade 1939

Comparative results of different inoculation techniques 285 Rose and Mundkur 1941

Morphologically indistinct from and therefore synonymous with *Ustilago perennans* and *U. nigra* 788 Fischer 1943

Imported into Palestine from United States on straw used to pack laboratory glassware 1958 Minz 1943

Variable extent of infection obtained in different lots of seed of same variety 2962 Tervet 1944

Twenty-five per cent crop reduction due to, with *Ustilago kollerii* 2409 Rapin 1947

#### PHYSIOLOGIC SPECIALIZATION

2426 Reed 1924

2603 Sampson 1925

2431 Reed 1927

2513 Rodenhiser 1928

2434 Reed 1929

2606 Sampson 1929

2123 Nicolaisen 1931

2124 Nicolaisen 1934

2125 Nicolaisen 1935

2398 Radulescu 1935

1063 Hansing *et al.* 1936

2458 Reed and Stanton 1936

3099 Vaughan 1938

2448 Reed 1940

2960, 2961 Tervet 1940

2962 Tervet 1944 (necessity of using same lot of seed over period of years in specialization studies)

1062 Hansing *et al.* 1945

1064 Hansing *et al.* 1946

2462 Reed *et al.* 1947

1256 Holton and Rodenhiser 1948

#### SPORE GERMINATION AND FACTORS AFFECTING

3056 Tulasne and Tulasne 1847

311 Brefeld 1883

1447 Kellerman and Swingle 1890

- 489 Cobb 1891
- 1158 Herzberg 1895
- 684 Duggar 1901
- 1126 Hecke 1909
- 1763 McAlpine 1910
- 2655 Schellenberg 1911
- 2231 Paravicini 1917
- 1404 Jones 1922
- 3301 Zade 1922
- 1405 Jones 1923
- 2605 Sampson 1928
- 1313 Hüttig 1931
- 1315 Hüttig 1933
- 2124 Nicolaisen 1934
- 1737 Lobik and Dahlstrem 1936
- 1489 Kitunen 1937
- 3208 Western 1937
- 1433 Keil 1940
- 1517 Kolk 1943

VARIETAL RESISTANCE AND SUSCEPTIBILITY, AND INHERITANCE OF

- 1363, 1365 Jensen 1888
- 1449 Kellerman and Swingle 1890
- 1413 Jones 1896
- 2737 Shamel 1901
- 3051 Tubeuf 1902
- 2547 Rose 1903
- 3316 Zavitz 1909
- 3317 Zavitz 1914
- 3106 Valivov 1918
- 1103 Heald 1919
- 2423 Reed 1920
- 2831 Stapledon 1921
- 2610 Sampson and Davies 1923
- 2457 Reed and Stanton 1925
- 2445 Reed *et al.* 1925
- 2457 Reed and Stanton 1925
- 2914 Tamme 1927
- 2513 Rodenhiser 1928
- 893 Garber *et al.* 1929
- 2549 Rosenstiel 1929
- 2606 Sampson 1929
- 2123 Nicolaisen 1931
- 2438 Reed 1931
- 3195 Welsh 1931
- 2439 Reed 1932
- 895 Garber and Hoover 1934
- 2441 Reed 1934

- 2653 Schattenberg 1934  
 2825 Stanton *et al.* 1934  
 2828 Stanton *et al.* 1934  
 2829 Stanton *et al.* 1934  
 834 Fomin 1935  
 2398 Radulescu 1935  
 2442 Reed 1935  
 3107 Vears and Macindoe 1935  
 1063 Hansing *et al.* 1936  
 2458 Reed and Stanton 1936  
 229 Blair 1937  
 1292 Humphrey and Coffman 1937  
 2078 Murphy *et al.* 1937  
 2306 Pichler 1937  
 2459 Reed and Stanton 1937  
 503 Coffman *et al.* 1938  
 2460 Reed and Stanton 1938  
 3152 Voss 1939  
 285 Bose and Mundkur 1941  
 3001 Tingey *et al.* 1941  
 2451 Reed 1942  
 2461 Reed and Stanton 1942  
 2827 Stanton and Murphy 1942  
 2243 Patel 1943  
 3326 Ziegenbein 1944  
 1062 Hansing *et al.* 1945  
 1064 Hansing *et al.* 1946  
 2462 Reed *et al.* 1947  
 1256 Holton and Rodenhiser 1948

**USTILAGO AVICULARIS** Liro Ann. Acad. Sci. Fenn. 17: 18. 1924

LIFE HISTORY, PARASITISM AND FACTORS AFFECTING

1724 Liro 1924

PHYSIOLOGIC SPECIALIZATION

1724 Liro 1924

SPORE GERMINATION AND FACTORS AFFECTING

1724 Liro 1924

**USTILAGO BETONICAE** G. Beck Verh. Zool.-Bot. (Wien) 30: 10. 1881.

*Ustilago violacea* f. *salviae* Ferraris, Ann. R. Istit. Bot. Roma 9: 190. 1902.

*Ustilago betonicae* Kirch., Zeitschr. Pflanz. 33: 97. 1923.

*Ustilago salviae* Cif., Ann. Mycol. 29: 5. 1931. (nom nud)

CULTURE ON ARTIFICIAL MEDIA

311 Brefeld 1883

HETEROTHALLISM AND SEX

311 Brefeld 1883

## LIFE HISTORY, PARASITISM AND FACTORS AFFECTING

311 Brefeld 1883

1482 Kirschner 1923

## SPORE GERMINATION AND FACTORS AFFECTING

311 Brefeld 1883

1482 Kirschner 1923

**USTILAGO BISTORTARUM (DC.) Körn. Hedwigia 16: 38. 1916***Uredo bistortarum pustulata* DC., Fl. France 6: 76. 1815.*Caeoma bistortarum* Link, in Willd., Sp. Pl. 6: 10. 1825.*Tilletia bullata* Fuck., Symb. Mycol. 40. 1869.*Ustilago pustulata* Wint., Hedwigia 18: 109. 1880.*Ustilago pustulata* Bubak, Archiv. Naturwiss. Landes Böhm. 15: 17. 1916.

## HETEROTHALLISM AND SEX

315 Brefeld 1895 (fusion of sporidia)

## LIFE HISTORY, PARASITISM AND FACTORS AFFECTING

2655 Schellenberg 1911

## MISCELLANEOUS

Morphology and symptoms 315 Brefeld 1895

Morphology and symptoms 2655 Schellenberg 1911

*Sphacelotheca inflorescentiae* Trel. considered synonym 1213  
Hirschhorn 1947

## SPORE GERMINATION AND FACTORS AFFECTING

315 Brefeld 1895

**USTILAGO BOUTELOUAE Kellerm. and Sw. Jour. Mycol. 5: 13. 1899.**

## MISCELLANEOUS

Morphology and symptoms 1445 Kellerman and Swingle 1889

Comparison with other smuts on *Bouteloua* 472 Ciferri 1934

## SPORE GERMINATION AND FACTORS AFFECTING

1445 Kellerman and Swingle 1889

2159 Norton 1896

**USTILAGO BOUTELOUAE-HUMILIS Bref. Unters. Gesammt. Myk. 12: 116. 1895**

## MISCELLANEOUS

Morphology 315 Brefeld 1895

Comparison with other smuts on *Bouteloua* 472 Ciferri 1934

## SPORE GERMINATION AND FACTORS AFFECTING

315 Brefeld 1895

**USTILAGO BROMIVORA (Tul.) Fisch. v. Waldh., Bull. Soc. Nat. Mosc. 40: 252. 1867.***Ustilago carbo vulgaris bromivora* Tul., Ann. Sci. Nat. Bot. III. 7: 81. 1847.  
*Contractia patagonica* Cooke and Massee, Grevillea 18: 34. 1899. (Type from Patagonia on *Bromus unioloides*).*Ustilago bromivora* Tul. forma *brachypodii* Hariot, Bull. Soc. Hist. Nat. Afr. Nord 9: 192. 1921.*Ustilago bromi-arvensis* Liro, Ann. Acad. Sci. Fenn. A. 17: 93. 1924.*Ustilago bromi-mollis* Liro, Ann. Acad. Sci. Fenn. A. 17: 94. 1924.

**CULTURE ON ARTIFICIAL MEDIA** (See also under *Ustilago bullata* and *U. lorentziana*)

311 Brefeld 1883

150 Bauch 1925

1501 Kniep 1926

2690, 2691 Schopfer and Blumer 1938 (auxo-autotrophic)

780 Fischer 1940

1900 Meiners 1947

**CONTROL** (See also under *Ustilago bullata* and *U. lorentziana*)

1374 Jensen 1893

1375 Jensen 1895

2569 Rostrup 1896

1285 Huergo 1905

1763 McAlpine 1910

2384 Quanjer 1913

59 Appel 1915

1693 Lind 1915

2386 Quanjer and Botjes 1915

973 Gram 1929

2018 Morwood 1935

2735 Simmonds 1936

674 Donald 1939

787 Fischer 1942 (as *Ustilago bullata*)**CYTOLOGY AND SEX** (See also under *Ustilago bullata* and *U. lorentziana*)

150 Bauch 1925

**HETEROTHALLISM AND SEX** (See also under *Ustilago bullata* and *U. lorentziana*)

311 Brefeld 1883

150 Bauch 1925

1501 Kniep 1926

159 Bauch 1934

**HOST RANGE** (See also under *Ustilago bullata* and *U. lorentziana*)

780 Fischer 1937

**HYBRIDIZATION AND GENETICS** (See also under *Ustilago bullata* and *U. lorentziana*)

1501 Kniep 1926 (sporidial fusions with other species)

159 Bauch 1934 (sporidial fusions with multipolar species)

793 Fischer 1948 (with *Ustilago hordei*)794 Fischer 1948 (with *Ustilago striiformis*)**LIFE HISTORY, PARASITISM AND FACTORS AFFECTING** (See also under *Ustilago bullata* and *U. lorentziana*)

1557 Kühn 1859

1562 Kühn 1874

311 Brefeld 1883

314 Brefeld 1888

1975 Molliard 1898

- 502 Cocconi 1904  
 1763 McAlpine 1910  
 1720 Liro 1924  
 150 Bauch 1925  
 506 Cohen 1946
- MISCELLANEOUS (See also under *Ustilago bullata* and *U. lorentziana*)
- Morphology and symptoms 311 Brefeld 1883  
 Possible toxicity to cattle 2556 Rostrup 1889  
 Possible toxicity to cattle 2562 Rostrup 1890  
 Possible toxicity to cattle 2567 Rostrup 1893  
 Causing floral proliferation in *Bromus erectus* 1975 Molliard 1898  
 Seed crop in mountain brome and cheat (*Bromus marginatus* and *B. secalinus*) very materially reduced in western states 993 Griffiths 1903  
 Smutty prairie grass (*Bromus catharticus*) unsuitable for fodder 494 Cobb 1904  
 Extreme prevalence in Australia 1763 McAlpine 1910  
 Spores retain viability at least 2½ years 1763 McAlpine 1910  
 Smut beetle, *Phalacrus corruscus* (Panz.) Everts, feeds upon the sori 2384 Quanjer 1913  
 History, host range and morphology 1720 Liro 1924  
 Longevity of spores; as much as 10 years 779 Fischer 1936  
 Comparative morphology with *Ustilago lorentziana* and *U. bullata* with which species consolidation is recommended 780 Fischer 1937  
 Growth factors 2690, 2691 Schopfer and Blumer 1938  
 Comparative morphology on *Bromus* spp. in Argentina 1191 Hirschhorn 1939  
 First report from Romania (on *Bromus tectorum*) 2631 Savulescu 1940
- PHYSIOLOGIC SPECIALIZATION (See also under *Ustilago bullata* and *U. lorentziana*)
- 1720 Liro 1924
- SPORE GERMINATION AND FACTORS AFFECTING (See also under *Ustilago bullata* and *U. lorentziana*)
- 311 Brefeld 1883  
 2329 Plowright 1889  
 716 Essmond 1893  
 2318 Pitzorno 1893  
 501 Cocconi 1903  
 1763 McAlpine 1910  
 2384 Quanjer 1913  
 1720 Liro 1924  
 150 Bauch 1925  
 780 Fischer 1937

1517 Kolk 1943  
506 Cohen 1946

**USTILAGO BULGARICA** Bubak Zeitschr. Landw. Versuchs. Österr.  
1910: 53. 1910

CONTROL

278 'Borghardt 1932

MISCELLANEOUS

Morphology, symptoms and comparison with other sorghum smuts  
379 Bubak 1910

**USTILAGO BULLATA** Berk., in Hooker Fl. New Zealand 2: 196.  
1855.

*Ustilago agropyri* Bisby and Buller, Trans. Brit. Mycol. Soc. 8: 98. hyponym.  
1922.

CONTROL (See also under *Ustilago bromivora* and *U. lorentziana*)

846 Fraser and Scott 1926  
1007 Güssow and Conners 1927  
973 Gram 1929  
2018 Morwood 1935  
2753 Simmonds 1936  
1153 Henry *et al.* 1938  
674 Donald 1939  
787 Fischer 1942

CULTURE ON ARTIFICIAL MEDIA (See also under *Ustilago bromivora*  
and *U. lorentziana*)

315 Brefeld 1895  
784 Fischer 1940  
1900 Meiners 1947

HETEROTHALLISM AND SEX (See also under *Ustilago bromivora* and  
*U. lorentziana*)

1501 Kniep 1926  
784 Fischer 1940

HOST RANGE (See also under *Ustilago bromivora* and *U. lorentziana*)

780 Fischer 1937

HYBRIDIZATION AND GENETICS (See also under *Ustilago bromivora*  
and *U. lorentziana*)

1501 Kniep 1926 (incomplete hybrid with *Ustilago hordei* and  
*U. perennans*)  
793 Fischer 1948 (with *Ustilago hordei*)  
794 Fischer 1948 (with *Ustilago striiformis*)

LIFE HISTORY, PARASITISM AND FACTORS AFFECTING (See also under  
*Ustilago bromivora* and *U. lorentziana*)

1763 McAlpine 1910  
846 Fraser and Scott 1926  
1007 Güssow and Conners 1927

2202 Padwick and Henry 1935

784 Fischer 1940

MISCELLANEOUS (See also under *Ustilago bromivora* and *U. lorentziana*)

Incidence on slender wheat grass in Canada 846 Fraser and Scott 1926

Incidence on slender wheatgrass near Omsk. Similar to *Ustilago turcomanica* 2025 Mourashkinsky 1926

Smut on *Bromus unioloides* responsible for fatal injury to sheep and contagious abortion in horses 1855 Marchionatto 1930

Incidence in seed samples of *Bromus arvensis* 677 Dorph-Petersen 1931

Longevity of spores; at least three years 779 Fischer 1936

Comparative morphology with *Ustilago bromivora* and *U. lorentziana* with which consolidation is recommended 780 Fischer 1937

Host range 780 Fischer 1937

Morphological comparison with *Ustilago lorentziana* and *U. bromivora* 780 Fischer 1937

Haplo-lethal deficiency operative against saprophytism 784 Fischer 1940

Comparative morphology germinating spores in races in Argentina 1196 Hirschhorn 1941

PHYSIOLOGIC SPECIALIZATION (See also under *Ustilago bromivora* and *U. lorentziana*)

785 Fischer 1940

1548 Kreizinger *et al.* 1947

SPORE GERMINATION AND FACTORS AFFECTING (See also under *Ustilago bromivora* and *U. lorentziana*)

315 Brefeld 1895

1763 McAlpine 1910

2202 Padwick and Henry 1935

780 Fischer 1937

1196 Hirschhorn 1941

796 Fischer and Hirschhorn 1945

VARIETAL RESISTANCE AND SUSCEPTIBILITY (See also under *Ustilago bromivora* and *U. lorentziana*)

674 Donald 1939 (*Bromus catharticus*)

2234 Parker 1942 [in *Bromus catharticus (unioloides)*]

1548 Kreizinger *et al.* 1947 (in *Bromus marginatus* and *Elymus canadensis*)

**USTILAGO CALAMAGROSTIDIS** (Fuck.) Clint. Jour. Mycol. 8: 138. 1902.

*Tilletia calamagrostis* Fuck., Sym. Myc. 40. 1869.

*Tilletia calamagrostidis* Schröt., Pilze, Schles. 1: 279. 1887.

*Ustilago scorbiculata* Liro, Ann. Acad. Sci. Fenn. A, 17: 68. 1924.



## MISCELLANEOUS

Smutted plants probably injurious to livestock 576 Dammann  
1892

Host range, morphology and historical background 1720 Liro  
1924

**USTILAGO CALANDRINIAE** Clint. Proc. Boston Soc. Nat. Hist.  
31: 378. 1904

LIFE HISTORY, PARASITISM AND FACTORS AFFECTING  
1763 McAlpine 1910

## MISCELLANEOUS

Symptoms and morphology 1763 McAlpine 1910

SPORE GERMINATION AND FACTORS AFFECTING  
1763 McAlpine 1910

**USTILAGO CALCARA** Griff. Bull. Torr. Bot. Club 31: 85. 1904.

## MISCELLANEOUS

Comparison with other smuts on *Bouteloua* 472 Ciferri 1934

**USTILAGO CARDUI** Fisch. v. Waldh. Bull. Soc. Nat. Moscow 40  
(1): 14. 1867.

*Ustilago reesiana* Kühn, Rabenh., Fungi Europ. 1798; 1799. 1874.

## CULTURE ON ARTIFICIAL MEDIA

311 Brefeld 1883

1501 Kniep 1926

## HETEROTHALLISM AND SEX

311 Brefeld 1883 (fusion of sporidia and development of infection hyphae)

1501 Kniep 1926

## HYBRIDIZATION AND GENETICS

1501 Kniep 1926 (sporidial fusions with other species)

## LIFE HISTORY, PARASITISM AND FACTORS AFFECTING

311 Brefeld 1883

## MISCELLANEOUS

Symptoms and morphology 2655 Schellenberg 1911

Hosts and morphology 1720 Liro 1924

## SPORE GERMINATION AND FACTORS AFFECTING

311 Brefeld 1883

1565 Kühn 1874

1720 Liro 1924

**USTILAGO CICHORII** Sydow Ann. Mycol. 27: 713. 1929.

## HETEROTHALLISM AND SEX

2898 Sydow 1929 (fusion of sporidia)

## MISCELLANEOUS

Technical description and Latin diagnosis 2898 Sydow 1929

## SPORE GERMINATION AND FACTORS AFFECTING

2898 Sydow 1929

**USTILAGO COICIS** Bref. Unters. Gesamt. Myk. 12, p. 110. 1896.

**CONTROL**

447 Chowdbury 1946

**LIFE HISTORY, PARASITISM AND FACTORS AFFECTING**

315 Brefeld 1895

447 Chowdbury 1946

**MISCELLANEOUS**

Morphology 315 Brefeld 1895

Morphology 2394 Raciborski 1900

First report from U. S. (from seed imported from Philippine Islands) 2977 Thomas 1920

**SPORE GERMINATION AND FACTORS AFFECTING**

315 Brefeld 1895

2394 Raciborski 1900

447 Chowdbury 1946

**USTILAGO COMBURENS** Ludwig Zeitschr. Pflanz. 3: 130. 1893.

*Ustilago microspora* Massee and Rodway, Kew Bull. 1901: 160.

*Ustilago exigua* Sydow, Ann. Mycol. 1: 177. 1903.

**MISCELLANEOUS**

Symptoms and morphology 1763 McAlpine 1910

Epidemic on *Danthonia pilosa* in New Zealand 2235 Parlane 1929

First report on *Danthonia pilosa* for New Zealand 2235 Parlane 1929

Irritation of mucous membrane of nose in sheep caused by in New Zealand 2235 Parlane 1929

**SPORE GERMINATION AND FACTORS AFFECTING**

1763 McAlpine 1910

2235 Parlane 1929

**USTILAGO CONSIMILIS** Sydow Ann. Mycol. 22: 281. 1924.

**MISCELLANEOUS**

Comparison with other smuts on *Saccharum* and *Erianthus* 2897 Sydow 1924

Comparison with other sugar-cane smuts 2054 Mundkur 1939

Comparison with other sugar-cane smuts 1198 Hirschhorn 1941

**USTILAGO CORTADERIAE** Grodsinsky. Physis 12 (43): 173. 1936.  
(nom. nud.) Darwinia 3: 368-369. 1939.

**MISCELLANEOUS**

Morphology, symptoms and Latin diagnosis 1191 Hirschhorn 1939

**USTILAGO CRAMERI** Körn. In Fuckel, Jahrb. Nass. Ver. Naturk. 27-28: 11. 1873.

**CULTURE ON ARTIFICIAL MEDIA**

3174 Wang 1938

**CONTROL**

1901 Melchers 1916

- 3097 Vasey 1918  
 2883 Sundararaman 1921  
   270 Bolley and Brentzel 1927  
 1007 Güssow and Melchers 1927  
 1905 Melchers 1927  
 1914 Melchers and Johnston 1927  
 2343 Porter *et al.* 1928  
 2628 Savoff 1928  
 2858, 2859 Stone 1928  
   278 Borghardt 1932  
 3294 Yu *et al.* 1934  
 3176 Wang 1944

## CYTOLOGY

- 3174 Wang 1938  
 3175 Wang 1943

## HETEROTHALLISM AND SEX

- 311 Brefeld 1883 (fusions between cells of promycelium)

## LIFE HISTORY, PARASITISM AND FACTORS AFFECTING

- 1121 Hecke 1905  
 1271 Hori 1907  
 3097 Vasey 1918  
 2883 Sundararaman 1921  
 473 Ciferri 1938

## MISCELLANEOUS

- Morphology 311 Brefeld 1883  
 Spores disseminated by beetle (*Phalacrus politus*) 3097 Vasey 1918  
 Longevity of spores; at least four years 779 Fischer 1936  
 Longevity of spores (as much as 64 years) 3173 Wang 1936  
 Case of respiratory allergy 3248 Wittich and Stakman 1937  
 Chlamydospores produced in culture have normal morphology and germination 3174 Wang 1938  
 Morphology and symptoms 1191 Hirschhorn 1939  
 As cause of hay fever and asthma 3246 Wittich 1939

## PHYSIOLOGIC SPECIALIZATION

- 3289 Yu 1937 (evidence of)  
 3176 Wang 1944 (six races)

## SPORE GERMINATION AND FACTORS AFFECTING

- 3056 Tulasne 1847  
 3252 Wolff 1874  
   311 Brefeld 1883  
 2655 Schellenberg 1911  
 3173 Wang 1936

## VARIETAL RESISTANCE AND SUSCEPTIBILITY, AND INHERITANCE OF

- 2342 Porter *et al.* 1930  
 3045 Tu and Li 1935  
 3289 Yu 1937

3292 Yu 1942

3176 Wang 1944

**USTILAGO CRUS-GALLI** Tracy and Earle Bull. Torr. Bot. Club 22:  
175. 1895.

*Cintractia seymouriana* P. Magnus, Ber. Deutschen Bot. Ges. 14: 217. 1896.

*Cintractia crus-galli* P. Magnus, Ber. Deutschen Bot. Ges. 14: 392. 1896.

#### LIFE HISTORY, PARASITISM AND FACTORS AFFECTING

1827 Magnus 1896

1763 McAlpine 1910

#### MISCELLANEOUS

Pathological histology 1827 Magnus 1896

Symptoms and morphology 1763 McAlpine 1910

Incidence and importance in India on *Echinochloa frumentacea*  
2057 Mundkur 1943

Revised description 2057 Mundkur 1943

**USTILAGO CYNODONTIS** (Pass.) P. Henn. Bot. Jahrb. (Engler)  
14: 369. 1891.

*Ustilago carbo* var. *cynodontis* Pass., Erb. Critt. Ital., ser. 2, 450. 1871, and  
Nuovo Giorn. Bot. Ital. 9: 236. 1877.

*Ustilago cynodontis* Curzi, Istit. Bot. Univ. Pavia and Lab. Critt. Univ.  
Pavia 3: 153. 1927.

#### CULTURE ON ARTIFICIAL MEDIA

315 Brefeld 1895

#### LIFE HISTORY, PARASITISM AND FACTORS AFFECTING

315 Brefeld 1895

1830 Magnus 1899

1763 McAlpine 1910

2655 Schellenberg 1911

1899 Mehta 1923

506 Cohen 1946

#### MISCELLANEOUS

Morphology 315 Brefeld 1895

Historical background and comparison with other species on  
*Cynodon* 1830 Magnus 1899

Longevity of spores; at least 5 years 779 Fischer 1936

Differentiation from *Ustilago paraguariensis* 3349 Zundel 1939

#### SPORE GERMINATION AND FACTORS AFFECTING

315 Brefeld 1895

1763 McAlpine 1910

2655 Schellenberg 1911

506 Cohen 1946

**USTILAGO DAVISI** Liro Ann. Acad. Sci. Fenn. 17: 80. 1924.

*Ustilago longissima* var. *macrospora* Davis, Trans. Wisc. Acad. Sci. Arts 11:  
174. 1897.

## CULTURE ON ARTIFICIAL MEDIA

1501 Kniep 1926

1428 Kammerling 1929

## CYTOLOGY

149 Bauch 1923

## HETEROTHALLISM AND SEX

149' Bauch 1923

1501 Kniep 1926

1428 Kammerling 1929

## HYBRIDIZATION AND GENETICS

1501 Kniep 1926 (sporidial fusions with other species)

1428 Kammerling 1929 (with *Ustilago longissima*)

## LIFE HISTORY, PARASITISM AND FACTORS AFFECTING

149 Bauch 1923

1428 Kammerling 1929

## MISCELLANEOUS

Simultaneous occurrence with *Ustilago longissima* in same collection and even same plant 151 Bauch 1926Simultaneous occurrence with *Ustilago longissima* in same collection and even same plant 1428 Kammerling 1929

## SPORE GERMINATION AND FACTORS AFFECTING

1428 Kammerling 1929

**USTILAGO DOMESTICA** Bref. Unters. Gesamt. Myk. 12: 135. 1895.

## HETEROTHALLISM AND SEX

315 Brefeld 1895 (sporidial fusions)

## MISCELLANEOUS

Morphology 315 Brefeld 1895

## SPORE GERMINATION AND FACTORS AFFECTING

315 Brefeld 1895

**USTILAGO DURIAEANA** Tul. Ann. Sci. Nat. Bot. III, 7: 105. 1847.*Ustilago ducellieri* Maire, Bull. Soc. Hist. Afr. Nord. 8: 140. 1917. (On *Avenaria serpyllifolia* L.)

## HETEROTHALLISM AND SEX

315 Brefeld 1895 (fusion of sporidia while still attached to promycelium)

## MISCELLANEOUS

Hosts and morphology 1720 Liro 1924

## SPORE GERMINATION AND FACTORS AFFECTING

315 Brefeld 1895

**USTILAGO ECHINATA** Schröt. Abh. Schles. Ges. Abth. Nat. Med. 1869-72: 4. 1870.*Caeoma longissimum* Dozy and Molkenboer, pp., Tidsskr. Nat. Gesch. Phys. 11: 407. 1884.

*Ustilago verrucosa* Vestergren, Jahreskat. Wiener Krypt. Tausch. 3: 1897.  
(Type from Sweden on *Baldingera arundinacea*). Not *Ustilago verrucosa*  
Schröt. 1896.

*Ustilago baldingerae* Vestergren, in Scheduleae.

*Ustilago vestergreni* Sacc. and Sydow, Sacc. Syll. Fung. 14: 413. 1899.

#### LIFE HISTORY, PARASITISM AND FACTORS AFFECTING

2190 Orth 1880

315 Brefeld 1895

2872 Strohmeyer 1896

#### MISCELLANEOUS

Suspected of causing abortion in cows 2191 Orth 1881

Suspected of causing abortion in cows 576 Dammann 1892

Symptoms and morphology 2655 Schellenberg 1911

Unusual distorting effect on inflorescence in Michigan 188 Benedict 1929

#### SPORE GERMINATION AND FACTORS AFFECTING

313 Brefeld 1888

**USTILAGO ENGENULA** Sydow and Butler Ann. Mycol. 10: 251.  
1912.

#### MISCELLANEOUS

Morphology and symptoms 2903 Sydow and Butler 1912

#### SPORE GERMINATION AND FACTORS AFFECTING

2903 Sydow and Butler 1912

**USTILAGO ESCULENTA** P. Henn. Hedwigia 34: 10. 1895.

#### CONTROL

2197 Ou 1938

#### MISCELLANEOUS

Used by women in Japan as eyebrow pencil and as dye for greying hair 1967 Miyabe 1895

Morphology 1967 Miyabe 1895

Comparison (morphological) between Japanese and Formosan specimens 1272 Hori 1907

Spores are *echinulate* rather than smooth 1272 Hori 1907

The unripe smut is a table delicacy 1272 Hori 1907

First report from U. S. 2246 Patterson 1912

Highly prized as food in Japan 1432 Kawagoe 1925

Method of cultivation for food 1432 Kawagoe 1925

#### SPORE GERMINATION AND FACTORS AFFECTING

1272 Hori 1907

3282 Yen 1938 (in various media)

**USTILAGO GLOBIGENA** Speg. Anal. Mus. Nac. Buenos Aires 6:  
208. 1899.

#### MISCELLANEOUS

Comparative morphology with *Ustilago sphaerogena* 1191 Hirschhorn 1939

**USTILAGO GOEPPERTIANA** Schröt. Krypt. Fl. Schles. 31: 272. 1889.

## CULTURE ON ARTIFICIAL MEDIA

315 Brefeld 1895

## LIFE HISTORY, PARASITISM AND FACTORS AFFECTING

2704 Schröter 1887

315 'Brefeld 1895

1720 Liro 1924

## MISCELLANEOUS

Symptoms and morphology 2655 Schellenberg 1911

History and morphology 1720 Liro 1924

## SPORE GERMINATION AND FACTORS AFFECTING

315 Brefeld 1895

**USTILAGO GRANDIS** Fries Syst. Mycol. 3: 518. 1829.*Erysibe typhoides* Wallr., Flora Crypt Germ. 2: 215. 1833.*Ustilago typhoides* Berk. and Br., Ann. Mag. Nat. Hist. ser. 2, 5: 465. 1850.

## CULTURE ON ARTIFICIAL MEDIA

1501 Kniep 1926

## CYTOLOGY

2732 Seyfert 1927

## HETEROTHALLISM AND SEX

150 Bauch 1925

159 Bauch 1934

1501 Kniep 1926

## HYBRIDIZATION AND GENETICS

1501 Kniep 1926 (sporidial fusions with other species)

159 Bauch 1934 (sporidial fusions with multipolar species)

## LIFE HISTORY, PARASITISM AND FACTORS AFFECTING

311 Brefeld 1883

2559 Rostrup 1890

845 Frank 1896

647 Dietel 1897

322 Brefeld and Falk 1905

1714 Linkola 1910

2655 Schellenberg 1911

321 Brefeld 1912

1689 Lind 1913

150 Bauch 1925

## MISCELLANEOUS

Symptoms and morphology 2655 Schellenberg 1911

History and morphology 1720 Liro 1924

Formation of clamp connection on the mycelium 2732 Seyfert 1927

Distribution 1094 Häyren 1932

Fresh spores germinate less readily than those kept at room temperature for several days 704 Enomoto 1934

Stimulatory effects of ether 704 Enomoto 1934

## SPORE GERMINATION

1575 Kühn 1877

311 Brefeld 1883

2329 Plowright 1889

1720 Liro 1924

150 Bauch 1925

**USTILAGO HALOPHILA** Speg. Anal. Mus. Buenos Aires III, 1: 58. 1902.

*Ustilago hypodytes* (Schlecht.) Fr. Syst. Myc. 3: 518. 1822 in part.

*Cintractia distichlidis* McAlp., Smuts of Austr. 169. 1910.

## CYTOLOGY

1211 Hirschhorn 1945

## LIFE HISTORY, PARASITISM AND FACTORS AFFECTING

1763 McAlpine 1910 (as *Cintractia distichlidis*)

## MISCELLANEOUS

Report on prevalence in western states (under name of *Ustilago hypodytes*) 993 Griffiths 1903

Symptoms and morphology (as *Cintractia distichlidis*) 1763 McAlpine 1910

Position in "*Ustilago hypodytes*" complex; comparison with other spp. *Ustilago* causing stem smut; geographic distribution 795 Fischer and Hirschhorn 1945

## SPORE GERMINATION

1763 McAlpine 1910 (as *Cintractia distichlidis*)1517 Kolk 1943 (as *Ustilago hypodytes*)

795, 796 Fischer and Hirschhorn 1945

**USTILAGO HEUFLERI** Fuck. Symb. Mycol. 39. 1869.

*Caeoma tulipae* Heufler, in Litt.

*Urocystis pompholygodes* f. *tulipae* Rabenh., Fungi Europ. No. 1099. 1866.

*Ustilago erythronii* Clint., in Peck Bull. Buffalo Nat. Sci. 1: 67. 1873.

*Ustilago tulipae* Wint., Rabenh. in Krypt. Fl. 1: 86. 1881.

*Ustilago ornithogali* f. *erythronii* DeToni, in Sacc. Syll. Fung. 7: 452. 1888.

## CULTURE ON ARTIFICIAL MEDIA

2621 Sartoris 1924

## CYTOLOGY

2621 Sartoris 1924

## LIFE HISTORY, PARASITISM AND FACTORS AFFECTING

2621 Sartoris 1924

## MISCELLANEOUS

Completion of life cycle on artificial media 2621 Sartoris 1924

## SPORE GERMINATION AND FACTORS AFFECTING

2621 Sartoris 1924

**USTILAGO HIERONYMI** Schröt. Hedwigia 35: 238. Aug. 1, 1896.

*Ustilago filifera* Norton, Trans. Acad. Sci. St. Louis 7: 237. Nov. 9, 1896.



## MISCELLANEOUS

- Comparison with other smuts on *Bouteloua* 472 Ciferri 1934  
 SPORE GERMINATION AND FACTORS AFFECTING  
 2159 Norton 1896

## USTILAGO HOLOSTEI DeBary Jahrb. Wissen. Bot. 7: 105. 1869.

## HETEROTHALLISM AND SEX

- 315 Brefeld 1895 (fusion of sporidia)

## MISCELLANEOUS

- Morphology and symptoms 315 Brefeld 1895  
 Morphology and symptoms 2655 Schellenberg 1911  
 SPORE GERMINATION AND FACTORS AFFECTING  
 315 Brefeld 1895

## USTILAGO HORDEI (Pers.) Lagerh. Mitteil. d. Badischen Bot. Ver. 70. 1889.

- Uredo segetum* subsp. *hordei* Pers., Synop. Fung. 224. 1801.  
*Uredo carbo* var. *hordei* DC., Fl. France 6: 76. 1815. p.p.  
*Ustilago segetum* Link, Ditmar in Sturm's Deutschland Fl. III, 1: 67. 1817 p.p.  
*Caeoma segetum* Link in Willdenow, Sp. Pl. 6: 1. 1825. p.p.  
*Erysibe vera hordei* Wallr., Fl. Crypt. Germ. 2: 217. 1833.  
*Uredo carbo-hordei* Philippar., Mem. Soc. Roy. Agr. Arts Seine-et-Oise 37: 195. 1837.  
*Ustilago carbo vulgaris hordeacea* Tul., Ann. Sci. Nat. Bot. III, 7: 80. 1847.  
*Ustilago segetum* subsp. *hordei* Rabenh., Herb. Mycol. Ed. II, 397. 1856.  
*Ustilago segetum* var. *hordei* f. *tecta* Jensen, Oru Korns. Brand. 61: 1888.  
*Ustilago segetum subspecta* Jensen, Jour. Roy. Agric. Soc. England II, 24: 406. 1888.  
*Ustilago segetum* var. *tecta* Jensen, Charb. Cereals 4: 1889.  
*Ustilago tecta hordei* Jensen, Ann. Rept. Kans. Agric. Expt. Sta. 2: 269. 1890.  
*Ustilago jensenii* Rostr., Overs. Kong. Danske. Vid. Selsk. Forh. 1890: 12. March 1890.  
*Ustilago hordei* Kell. and Sw., Ann. Rept. Kans. Agric. Expt. Sta. 2: 268. June, 1890.

## CONTROL

- 1363, 1364 Jensen 1888  
 1447 Kellerman and Swingle 1890  
 1137 Henderson 1898  
 2386 Quanjer and Batjes 1915  
 1901 Melchers 1916  
 2596 Salmon and Wormald 1918  
 223 Binz and Bausch 1922 (Ehrlich's application of chemotherapeutical index works for vegetable pathology, according to results with *Ustilago hordei*)  
 1143 Henning 1919  
 1144 Henning 1922  
 2307 Pichler and Wober 1922 (use of ultra-violet, X-rays and radium)  
 2602 Sampson 1923  
 2816 Stakman and Lambert 1923

- 3021 Tisdale, Taylor and Griffiths 1923  
 911 Gassner 1925  
 1659 Leukel 1926  
 2469 Reichert 1926 (sulphur dust inferior to other dusts)  
 2580 Rump 1926  
 270 Bolley and Brentzel 1927  
 824 Flor 1927  
 1007 Güssow and Conners 1927  
 1463 Kiesselbach 1927  
 2341 Porter 1928  
 516 Conners 1929  
 1660 Leukel 1929  
 2344 Porter *et al.* 1929  
 1661 Leukel 1930  
 1662 Leukel 1930 (comparative advantages and disadvantages  
 of dusts and liquids as fungicides)  
 2951 Taylor and Zehner 1930  
 2016 Morwood 1932  
 2103 Neill 1932  
 2278 Petit 1932  
 2279 Petit 1933  
 1164 Hewlett and Hewlett 1934  
 1407 Jones 1934  
 2017 Morwood 1934  
 2018 Morwood 1935  
 2280, 2283 Petit 1935  
 2304 Pichler 1935 (hydrogen peroxide inadequate)  
 1664 Leukel 1936  
 2753 Simmonds 1936  
 1409 Jones *et al.* 1938  
 1672 Leukel and Nelson 1939  
 2288, 2289, 2290 Petit 1939  
 1410 Jones and El Nasr 1940  
 3288 Young and McClelland 1940  
 983 Greaney and Wallace 1943  
 3149 Volosky de Hernandex 1945  
 2582 Russell 1946 (centrifuge testing of seed to determine if con-  
 tains enough spores to warrant treatment)  
 CULTURE ON ARTIFICIAL MEDIA  
 1158 Herzberg 1895 (as *Ustilago jensenii*)  
 68 Appel and Riehm 1911  
 1172 Hils 1912  
 820 Fleroff 1919  
 821 Fleroff 1923  
 2621 Sartoris 1924  
 1501 Kniep 1926  
 2580 Rump 1926

- 2647 Schaffnit 1926
- 2513 Rodenhiser 1928
- 1313 Hüttig 1931
- 3178 Wang 1932
- 2586, 2587 Ruttle 1934
- 2690, 2691 Schopfer and Blumer 1938 (auxo-autotrophic)
- 1433 Keil 1940

## CYTOLOGY

- 2231 Paravicini 1917
- 2580 Rump 1926
- 633 Dickinson 1927
- 1459 Kharbush 1927
- 1313 Hüttig 1931
- 3178 Wang 1932
- 24 Allison 1937

## HETEROTHALLISM AND SEX

- 2231 Paravicini 1917 (copulation between sporidia)
- 1501 Kniep 1926
- 1313 Hüttig 1931
- 159 Bauch 1934
- 2586, 2587 Ruttle 1934
- 1988 Moor and Allison 1935 (two sex groups in albino strains)
- 24 Allison 1937

## HOST RANGE

- 1347 Jaczewski 1925 (on rye in Siberia)
- 781 Fischer 1939 (on grasses)

## HYBRIDIZATION AND GENETICS

- 634 Dickinson 1926 (incomplete hybridization with *Ustilago kollerii*, i.e., infection, but not carried to chlamydospore production)
- 1501 Kniep 1926 (sporidial fusions with other species)
- 159 Bauch 1934 (sporidial fusions with multipolar species)
- 2587 Ruttle 1934 (with smut intermediate between *Ustilago nigra* and *U. nuda*)
- 23 Allison 1935
- 24 Allison 1937 (with *Ustilago nuda*, unsuccessful)
- 24 Allison 1937 (with *Ustilago avenae*, *U. tritici*, and *U. kollerii* unsuccessful—only sporidial fusions)
- 1300 Hungerford 1938 (with *Ustilago nigra*)
- 213 Bever 1942 (a buff-colored, nonpathogenic F<sub>3</sub> segregate from cross with *Ustilago nigra*)
- 2937 Tapke 1944 (natural hybridization between races)
- 215 Bever 1945 (with *Ustilago nigra*)
- 793 Fischer 1948 (with *Ustilago bullata*)

## LIFE HISTORY, PARASITISM AND FACTORS AFFECTING

- 1929 Meyen 1841
- 1226 Hoffman 1866

- 803 Fischer v. Waldheim 1869  
 3252 Wolff 1874  
 1363 Jensen 1888  
 1447 Kellerman and Swingle 1890  
 1158 Herzberg 1895  
 318 Brefeld 1903  
 2547 Rose 1903  
 319 Brefeld 1907  
 1271 Hori 1907  
 851 Freeman and Johnson 1909  
 1763 McAlpine 1910  
 2655 Schellenberg 1911  
 321 Brefeld 1912  
 1172 Hils 1912  
 230 Blaringhem 1923  
 1618 Lang 1923  
 3002 Tisdale 1923  
 728 Faris 1924  
 2163 Novopokrovsky and Skaskin 1925  
 176 Beck 1926  
 2580 Rump 1926  
 2647 Schaffnit 1926  
 634 Dickinson 1927  
 1661 Leukel 1930  
 2952 Taylor and Zehner 1931  
 3085 Vanderwalle 1932  
 2586, 2587 Ruttle 1934  
 4 Aamodt and Johnson 1935  
 24 Allison 1937  
 1409 Jones and El Nasr 1938  
 1599 Kutzevol 1938  
 2931, 2932 Tapke 1940
- MISCELLANEOUS**
- Comparative effectiveness of inoculation methods 2942 Tapke and Bever 1942  
 Differentiation from *Ustilago nuda* and other early data 1363 Jensen 1888  
 Simultaneous incidence with *Ustilago nuda* in same plant 1363 Jensen 1888  
 Excellent early history 1447 Kellerman and Swingle 1890  
 Chlamydospores in culture 820 Fleroff 1919  
 Effect of ultra-violet and X-rays on germinability 2307 Pichler and Wober 1922  
 Development of chlamydospores in culture 821 Fleroff 1923  
 Confusion with *Ustilago nuda* on symptomology 1618 Lang 1923  
 Effect of dehulling on per cent infection 3002 Tisdale 1923  
 Inoculation method 3002 Tisdale 1923

- Sporulation in leaves 728 Faris 1924  
Hosts, history and morphology 1720 Liro 1924  
Development of chlamydospores in culture 2621 Sartoris 1924  
Completion of life cycle on artificial media 2621 Sartoris 1924  
Inoculation experiments 176 Beck 1926  
Development of chlamydospores in culture 2580 Rump 1926  
Production of chlamydospores on agar and which germinate normally 2580 Rump 1926  
Spores retain viability at least 5 years 2580 Rump 1926  
Sporidia viability on malt agar 7 weeks; 4-7 months in damp chamber 2580 Rump 1926  
Sporulation in nodal tissues 2580 Rump 1926  
Completion of life cycle in biomalt agar, but spores do not germinate 2647 Schaffnit 1926  
Extraction of fat from within and around spores 2647 Schaffnit 1926  
Factors contributing to and repressing production of sporidia 2647 Schaffnit 1926  
Per cent infection increased by dehulling seed with sulphuric acid 344 Briggs 1927  
Hyphal fusions 633 Dickinson 1927  
Incidence in Ireland 2079 Murphy 1927  
Segregation of sex and cultural characters is independent 1313 Hüttig 1931  
Type of germination regulated by temperature 1313 Hüttig 1931  
Effect of depth of seeding on per cent smut 2952 Taylor and Zehner 1931  
Chemical composition of the spores 412 Campanile 1932  
Beetle feeding on and possibility of biological control 3085 Vanderwalle 1932  
Hybrid (natural) with *Ustilago nuda* (?) 3085 Vanderwalle 1932  
*Trichothecium roseum* parasitic on 3085 Vanderwalle 1932  
Completion of life history on artificial media 3178 Wang 1932  
Development of chlamydospores in culture 3178 Wang 1932  
Comparison with field collections of *Ustilago nuda* 2585 Ruttle 1933  
Fresh spores germinate less readily than those kept at room temperature for several days 704 Enomoto 1934  
Highest per cent infection from hand-dehulled seed 4 Aamodt and Johnston 1935  
Per cent infection increased by debulling seed with sulphuric acid 4 Aamodt and Johnston 1935  
Albino strains 1988 Moore and Allison 1935  
Inoculation method 2923 Tapke 1935  
Longevity of spores; at least 23 years 779 Fischer 1936  
Freshly collected spores germinate less freely 1737 Lobik and Dahlstrom 1936

- Case of respiratory allergy 3248 Wittich and Stakman 1937  
 Serological differentiation in closely related species 172 Beck 1938  
 Incidence in Cyprus 2092 Nattrass 1938  
 Growth factors 2690, 2691 Schopfer and Blumer 1938  
 Artificial infection of *Agropyron caninum*, *Elymus canadensis*, *E. glaucus*, *E. sibericus*, *Hordeum nodosum*, and *Sitanion jubatum* 781 Fischer 1939  
 Natural infection of *Agropyron cristatum* and *Elymus glaucus* 781 Fischer 1939  
 Spores retain viability four years under laboratory conditions 2204 Pal and Mundkur 1939  
 As cause of hay fever and asthma 3246 Wittich 1939  
 Increased susceptibility of barley dehulled seed may be due to longer period of emergence 1410 Jones and El Nasr 1940  
 Lack of uniformity in results of inoculations with same collections and same host testers 2721 Semeniuk 1940  
 Effect of X-radiation on the germination of spores 2524 Rodenhiser and Maxwell 1941  
 Rate of mutation not influenced by X-rays 2524 Rodenhiser and Maxwell 1941  
 Morphologically indistinct from and therefore synonymous with *Ustilago kolleri* (*U. levis*) 788 Fischer 1943  
 Badly contaminated seed not suited for malting purposes 1897 Mead 1943  
 Brewing normal flavored beer from smut contaminated barley 3078 Urion and Hanus 1947

#### PHYSIOLOGIC SPECIALIZATION

- 730 Faris 1924  
 2513 Rodenhiser 1928  
 4 Aamodt and Johnston 1935  
 24 Allison 1937  
 2926 Tapke 1937  
 2721 Semeniuk 1940  
 3297 Yu and Fang 1945

#### SPORE GERMINATION AND FACTORS AFFECTING

- 803 Fischer v. Waldheim 1869  
 1584 Kühn 1889  
 1447 Kellerman and Swingle 1890  
 1932 Miczynski 1893  
 314 Brefeld 1895  
 315 Brefeld 1895  
 1158 Herzberg 1895  
 62 Appel and Gassner 1907  
 1751 Lutman 1910  
 1763 McAlpine 1910  
 2655 Schellenberg 1911  
 2231 Paravicini 1917

- 2163 Novopokrovsky and Skaskin 1925  
 2580 Rump 1926  
 2647 Schaffnit 1926  
 1313 Hütting 1931  
 1737 Lobik and Dahlstrem 1936 (methods of)  
 1737 Lobik and Dahlstrem 1936 (temperature range for germination)  
 1433 Keil 1940  
 1517 Kolk 1943  
 215 Bever 1945

VARIETAL RESISTANCE AND SUSCEPTIBILITY, AND INHERITANCE OF

- 1103 Heald 1919  
 730 Faris 1924  
 513 Conners 1927  
 2513 Rodenhiser 1928  
 1053 Hanna and Popp 1931  
 2087 Nahmacher 1932  
 1401 Johnston 1934  
 3295 Yu *et al.* 1934  
     4 Aamodt and Johnston 1935  
     24 Allison 1937  
 3290 Yu 1940  
 2378 Pugsley and Vines 1946  
 1256 Holton and Rodenhiser 1948

USTILAGO HYPODYTES (Schlecht.) Fries Syst. Mycol. 3: 518. 1829.

- Caeoma hypodytes* Schlecht., Fl. Berol. 2: 129. 1824.  
*Erysibe hypodytes* Wallr., Fl. Crypt. Germ. 2: 216. 1833.  
*Uredo hypodytes* Desm., Ann. Sci. Nat. Bot. II. 13: 182. 1840.  
*Ustilago lygei* Rabenh., Unio. Itin. Crypt. 4: 1886.  
*Ustilago hypodytes* var. *lygei* Rabenh., Fung. Europ. No. 1800. 1873.  
*Ustilago hypodytes* forma *tritici repentis* Rabenh., Hedwigia 12: 149. 1873.  
*Ustilago sporoboli* Ell. and Ev., Bull. Torrey Bot. Club 24: 282. 1897.  
*Ustilago funalis* Ell. and Ev., Bull. Torrey Bot. Club 24: 457. 1897.  
*Ustilago stipicola* Speg., Anal. Mus. Nac. Buenos Aires III. 1: 59. 1902.  
*Ustilago nummularia* Speg., An. Mus. Nac. Buenos Aires III. 1: 59. 1902.  
*Cintractia hypodytes* Maire, Bull. Soc. Bot. (France) 53: 197. 1906.  
*Cintractia distichlydis* McAlp., Smuts of Australia 169. 1910.  
*Ustilago distichlydis* Cif., Ann. Mycol. 26: 32. 1928.  
*Ustilago bromi-erecti* Cif., Ann. Mycol. 29: 51. 1931.  
*Ustilago stipae* Cif., Ann. Mycol. 29: 52. 1931.  
*Ustilago sumnevicziana* Lavrov, Trav. Inst. Sci. Biol. Univ. Tomsk 2: 21. 1936. (On *Glyceria distans* Wahl. = *Atropia distans* Rupr., in N. E. Turkistan).  
*Cintractia hypodytes* Maire, Meni. Soc. Sci. Nat. Maroc. 45: 44. 1937.

*Note:* See also the note under *Ustilago spgazzinii* and *U. spgazzinii* var. *agrestis*. Fischer (790) and Fischer and Hirschhorn (795) considered the binomial *U. hypodytes* as a catch-all *nomen dubium* for several species producing similar symptoms on grasses. This included *U. nummularia* Speg. and since the binomial *U. hypodytes* appeared to be a *nomen dubium* it was pro-

posed to use Spegazzini's binomial for the stem smuts with small, smooth spores, lacking bipolar crests or appendages. Recently, however, Hirschhorn (1213) after critical study of a designated lectotype of *U. hypodytes*, concluded that *U. nummularia* is probably identical and recommends that the latter be considered a synonym or at most a variety of *U. hypodytes*. Hence, I have returned to the binomial *U. hypodytes* and have included *U. nummularia* among the synonyms.

#### CULTURE ON ARTIFICIAL MEDIA

286 Boss 1927

280 Bornhövd 1936

#### CYTOLOGY

286 Boss 1927

1459 Kharbush 1927

280 Bornhövd 1936

#### HETEROTHALLISM AND SEX

159 Bauch 1934 (probably refers to *Ustilago spegazzinii* var. *agrestis*)

#### HYBRIDIZATION AND GENETICS

159 Bauch 1934 (sporidial fusion with bipolar species—probably refers to *Ustilago spegazzinii* var. *agrestis*)

#### HOST RANGE

280 Bornhövd 1936

#### LIFE HISTORY, PARASITISM AND FACTORS AFFECTING

2667 Schlechtendal 1824

1929 Meyen 1841

202 Berkeley and Broome 1850

614 DeBary 1853

300 Braun 1854

1557 Kühn 1859

803 Fischer v. Waldheim 1869

2329 Plowright 1889

845 Frank 1896

1828 Magnus 1896

647 Dietel 1897

2655 Schellenberg 1911

1690 Lind 1913

2573 Rostrup 1913

2468 Reichert 1921

1720 Liro 1924

774 Fischer and Gäumann 1929

763 Feucht 1930

3331 Zillig 1932

280 Bornhövd 1936

#### MISCELLANEOUS

First description (as *Caeoma hypodytes*) 2667 Schlechtendal 1824

History, hosts and morphology 1720 Liro 1924

Morphological modifications 763 Feucht 1930



Morphological changes in the host 280 Bornhövd 1936

Comparison with other stem smuts of grasses, *Stipa* and *Oryzopsis*; pathological histology; geographic distribution 790 Fischer 1945

Morphology and symptoms 796 Fischer and Hirschhorn 1945

Position in the "*Ustilago hypodytes*" complex and comparison with other spp. of *Ustilago* causing stem smut 795 Fischer and Hirschhorn 1945

Designation of a lectotype 1213 Hirschhorn 1947

Further clarification of the binomial "*Ustilago hypodytes*" 1213 Hirschhorn 1947

#### SPORE GERMINATION AND FACTORS AFFECTING

3237 Winter 1876

311 Brefeld 1883

716 Essmon 1893

286 Boss 1927

280 Bornhövd 1936

795 Fischer and Hirschhorn 1945 (as *Ustilago nummularia*)

796 Fischer and Hirschhorn 1945 (as *Ustilago nummularia*)

#### USTILAGO INTERMEDIA Schröt. Beitr. Biol. Pflanz. (Cohn) 2:

352. 1877. Hedwigia 12: 149. 1873. (Rabenh., Fung. Europ. No. 1696, 1873).

#### CULTURE ON ARTIFICIAL MEDIA

311 Brefeld 1883

#### LIFE HISTORY, PARASITISM AND FACTORS AFFECTING

2655 Schellenberg 1911

#### MISCELLANEOUS

Symptoms, morphology and comparison with related species 2655 Schellenberg 1911

#### SPORE GERMINATION AND FACTORS AFFECTING

2698 Schröter 1877

311 Brefeld 1883

#### USTILAGO JACKSONII Zundel and Dunlap N. A. Flora 7: (14): 982. 1939.

#### MISCELLANEOUS

Comparison with other stem smuts on *Stipa* and *Oryzopsis*; pathological histology; geographic distribution 790 Fischer 1945

#### USTILAGO JACKSONII Zundel and Dunlap var. VENTANENSIS

Hirschh. Notas Museo de La Plata 8: 171. 1943.

#### MISCELLANEOUS

Technical description and Latin diagnosis and comparison with other *Ustilago* spp. on *Stipa* 1209 Hirschhorn 1943

#### USTILAGO KENJIANA S. Ito Trans. Sapparo Nat. Hist. Soc. 14: 87. 1935.

#### MISCELLANEOUS

Technical description and Latin diagnosis. In ovaries of sorghum in Manchuria 1328 Ito 1935

**USTILAGO KOLLERI** Wells Bot. Notiser 1893: 10.

*Ustilago avenae* var. *levis* Kell. and Sw., Ann. Rept. Kansas Agric. Expt. Sta. 2: 259. 1890.

*Ustilago levis* Magnus, Ber. Natur-Wiss.-Mediz. Ver. (Innsbruck) 21: 33. 1894.

**CONTROL**

- 61 Appel and Gassner 1906
- 1901 Melchers 1916
- 847 Fraser and Simmonds 1923
- 1116 Heald *et al.* 1923
- 1280 Howitt and Stone 1923
- 2816 Stakman and Lambert 1923
- 848 Fraser and Simmonds 1924
- 639 Dickson 1925
- 1659 Leukel 1926
- 270 Bolley and Brentzel 1927
- 1007 Güssow and Conners 1927
- 1463 Kiesselbach 1927
- 2400 Raeder and Hungerford 1927
- 2638 Sayre and Thomas 1927
- 868 Fromme 1928
- 2639, 3640 Sayre and Thomas 1928
- 516 Conners 1929
- 2312 Pierstorff and Sayre 1929
- 2637 Sayre 1929
- 1429 Karns 1930 (use of iodine dust)
- 2920 Tapke 1932
- 3287 Young and McClelland 1933
- 2063 Mundkur and Khan 1934
- 136 Barbee 1935
- 2018 Morwood 1935
- 983 Greaney and Wallace 1943
- 2582 Russell 1946 (centrifuge testing of seed to determine if contains enough spores to warrant treating)
- 2409 Rapin 1947
- 2756 Simmonds 1948 (use of oil to counteract dust nuisance in fungicides)

**CULTURE ON ARTIFICIAL MEDIA**

- 635 Dickinson 1928
- 2513 Rodenhiser 1928
- 637 Dickinson 1931
- 1235 Holton 1931
- 2340 Popp and Hanna 1935
- 2444 Reed 1936
- 2614 Sampson and Western 1938
- 2690, 2691 Schopfer and Blumer 1938 (auxo-autotrophic)
- 3079 Utter 1938

## CYTOLOGY

- 1236 Holton 1932
- 1244 Holton 1941 (buff smut)

## GENETICS

- 633, 634 Dickinson 1927
- 635 Dickinson 1928
- 637 Dickinson 1931

## HETEROTHALLISM AND SEX

- 1050 Hanna and Popp 1930
- 1054 Hanna and Popp 1931
- 1235 Holton 1931
- 1236 Holton 1932
- 1238 Holton 1933
- 2340 Popp and Hanna 1935
- 1241 Holton 1936
- 1244 Holton 1941

## HYBRIDIZATION AND GENETICS

- 634 Dickinson 1927 (incomplete hybrid with *Ustilago hordei*—infection but not carried to spore formation)
- 1050 Hanna and Popp 1930
- 637 Dickinson 1931 (seven pairs of independent characters)
- 1235 Holton 1931
- 638 Dickinson 1932
- 1236 Holton 1932
- 1238 Holton 1933
- 2124 Nicolaisen 1934
- 2340 Popp and Hanna 1935 (with *Ustilago avenae*, and intra-specific)
- 1240, 1241 Holton 1936 (with buff smut and *Ustilago avenae*)
- 24 Allison 1937
- 2614 Sampson and Western 1938
- 3079 Utter 1938 (with *Ustilago avenae*)
- 1244 Holton 1941

## LIFE HISTORY, PARASITISM AND FACTORS AFFECTING

- 3222 Wille 1893
- 61 Appel and Gassner 1906
- 2642 Schafer 1923 (effect of dehulling on infection)
- 546 Coulson and Lods 1925 (heavier percentage of infection results from smaller seed)
- 3031 Traen 1925 (temperature and humidity requirements for infection)
- 640 Dickson 1926
- 1394 Johnston 1927 (soil moisture, temperature and dehulling)
- 2606 Sampson 1929
- 2607 Sampson 1933
- 6 Aamodt and Platt 1936
- 2444 Reed 1936

- 2445 Reed 1936 (rate of growth of host has little effect on development of smut)  
 3207 Western 1936  
   24 Allison 1937  
   296 Brandwein 1937  
   297 Brandwein 1938  
 2614 Sampson and Western 1938  
 2447 Reed 1939 (rate of growth of host has little effect on development of smut)  
   298 Brandwein 1940  
 2451 Reed 1942  
   299 Brandwein 1944

## MISCELLANEOUS

- Covered smut of oats recognized as distinct from loose smut and described as variety *Ustilago avenae* var. *levis* 1447 Kellerman and Swingle 1890  
*Ustilago avenae* var. *levis* raised to specific rank 1822 Magnus 1894  
 Effect of dehulling oat seed on per cent infection 880 Gaines 1925  
 Sporulation in leaves 2455 Reed *et al.* 1925  
*Acontium ustilaginicola* n. sp. parasitic on, 640 Dickson 1926  
 Hyphal fusions 633 Dickinson 1927  
 Pathological histology. Incomplete hybrids with other species 634 Dickinson 1927  
 Incidence in Ireland 2079 Murphy 1927  
 Permanence and segregation of cultural characters 635 Dickinson 1928  
 Longevity of spores 2605 Sampson 1928  
 Dehulling increases per cent infection 167 Bayles and Coffman 1929  
 High mean temperatures at time of seeding favorable to infection 167 Bayles and Coffman 1929  
 Seedlings from small seed more susceptible than those from large seed 1738 Lods and Coulson 1929  
 Sporulation in leaves 2606 Sampson 1929  
 Influence of environment on segregation for sex and cultural characters 636 Dickinson 1930  
 Incidence on *Avena fatua* in western Canada 2754 Simmonds 1930  
 On wild oats, *Avena fatua* 2754 Simmonds 1930  
 Dehulling necessary to satisfactory interpretation of the results of studies of inheritance of smut resistance 2826 Stanton *et al.* 1930  
 Influence of dehulling on per cent infection 2826 Stanton *et al.* 1930  
 Increase in per cent infection by dehulling (hulling) seed 2766 Smith and Bressman 1931

- Inducing infection on the resistant Markton by cutting back plants  
2766 Smith and Bressman 1931
- Effect on height and tillering 3196 Welsh 1932
- Effect of smut on rust development 3196 Welsh 1932
- Morphological responses of plants to infection 3196 Welsh 1932
- Smut-infected plants more susceptible to crown rust 3196 Welsh  
1932
- Buff smut and crosses with *Ustilago avenae* and *U. kolleri* 1238  
Holton 1933
- Macroscopic distinctions from *Ustilago avenae* 1468 Kingsley  
1933
- Comparative development of two races on same oat variety 2607  
Sampson 1933
- Influence of smut infection on plant vigor 1283 Hubbard and  
Stanton 1934
- Most herbarium specimens of oats smuts at Pusa labelled *Ustilago  
avenae* were *U. kolleri* 2048 Mundkur 1934
- Longevity of spores; at least 4 years 779 Fischer 1936
- Mutation 1241 Holton 1936
- Rate of growth of host does not greatly influence development of  
smut 2445 Reed 1936
- Adverse effects of latent infection 2843 Stevens 1936
- Five grades of parasitism in resistant varieties 3207 Western 1936
- Variation in extent of infection in different seed lots of same host  
variety 3207 Western 1936
- Cytology of latent infection 296 Brandwein 1937
- Latent infection not harmful to host 296 Brandwein 1937
- Emergence of seedlings inhibited by smut infection 297 Brand-  
wein 1938
- Comparative effectiveness of various inoculation methods 1674  
Leukel *et al.* 1938.
- Rate of growth of host does not greatly influence development of  
smut 2446 Reed 1938
- Loss of specific pathogenicity through screening effect of hosts  
2614 Sampson and Western 1938
- Growth factors 2690, 2691 Schopfer and Blumer 1938
- Per cent smut decreased by vernalization of the seed 2949 Taylor  
and Coffman 1938
- Host specialized races not distinguishable by cultural characters  
3079 Utter 1938
- Spores lose viability 4 months under laboratory conditions 2204  
Pal and Mundkur 1939
- As cause of hay fever and asthma 3246 Wittich 1939
- Cause of respiratory allergy 3160 Waldbott and Ascher 1940
- Spores quickly lose viability after 4th month 285 Bose and  
Mundkur 1941

Comparative morphology with *Ustilago hordei*, with which consolidation is recommended 788 Fischer 1943

Variable extent of infection obtained in different seed lots of same variety 2962 Tervet 1944

Twenty-five per cent crop reduction due to, with *Ustilago avenae* 2409 Rapin 1947

#### PHYSIOLOGIC SPECIALIZATION

2426 Reed 1924

2603 Sampson 1925

2431 Reed 1927

2513 Rodenhiser 1928

2434 Reed 1929

2606 Sampson 1929

2448 Reed 1940

2960, 2961 Tervet 1940

1244 Holton 1941 (seven physiologic races of the buff smut mutant)

2962 Tervet 1944 (need for using same lot of seed over period of years in specialization work)

1256 Holton and Rodenhiser 1948

#### SPORE GERMINATION AND FACTORS AFFECTING

1447 Kellerman and Swingle 1890

1158 Herzberg 1895

62 Appel and Gassner 1907

2655 Schellenberg 1911

1277 Howe 1926 (effect of pH on)

2605 Sampson 1928

#### VARIETAL RESISTANCE AND SUSCEPTIBILITY, AND INHERITANCE OF

2423 Reed 1920

2830 Stanton *et al.* 1924 (immunity of Markton)

879, 880 Gaines 1925

2457 Reed and Stanton 1925

2455 Reed *et al.* 1925

2606 Sampson 1929

504 Coffman *et al.* 1931

2437, 2438 Reed 1931

2766 Smith and Bressman 1931

3195 Welsh 1931

2439 Reed 1932

1389 Johnson 1933

895 Garber and Hoover 1934

2441 Reed 1934

2825 Stanton *et al.* 1934

2828 Stanton *et al.* 1934

2829 Stanton *et al.* 1934

136 Barbee 1935

834 Fomin 1935

- 2442 Reed 1935  
 3107 Vears and Macindoe 1935  
     6 Aamodt and Platt 1936  
 2444 Reed 1936  
 2458 Reed and Stanton 1936  
     229 Blair 1937  
 1292 Humphrey and Coffman 1937  
 2459 Reed and Stanton 1937  
     503 Coffman *et al.* 1938  
 2460 Reed and Stanton 1938  
     285 Bose and Mundkur 1941 (in India)  
 3001 Tingey *et al.* 1941  
 2451 Reed 1942  
 2827 Stanton and Murphy 1942

**USTILAGO KÜHNEANA** Wolff. Bot. Ztg. 1874: 814

CULTURE ON ARTIFICIAL MEDIA

311 Brefeld 1883

HETEROTHALLISM AND SEX

311 Brefeld 1883

LIFE HISTORY, PARASITISM AND FACTORS AFFECTING

311 Brefeld 1883

2655 Schellenberg 1911

MISCELLANEOUS

Symptoms and morphology 311 Brefeld 1883

Symptoms and morphology 2655 Schellenberg 1911

History and morphology 1720 Liro 1924

SPORE GERMINATION AND FACTORS AFFECTING

3252 Wolff 1874

311 Brefeld 1883

2329 Plowright 1889

**USTILAGO LAGERHEIMII** Bref. Gesamt. Myk. Unters. 12: 136. 1895.

HETEROTHALLISM AND SEX

315 Brefeld 1895 (fusion of sporidia)

MISCELLANEOUS

Morphology and symptoms 315 Brefeld 1895

SPORE GERMINATION AND FACTORS AFFECTING

315 Brefeld 1895

**USTILAGO LONGISSIMA** (Schlecht.) Meyen. Pflanz. Path. 124. 1841.

*Lycoperdon filiferum* Schrank, Hoppe's Bot. Taschenb. 69. 1793.

*Uredo longissima* Sow., English Fungi. 139. 1799.

*Caecoma longissimum* Schlecht., Fl. Berol. 2: 129. 1824.

*Erysibe longissima* Wallr., Fl. Crypt. Germ. 2: 215. 1833.

*Ustilago longissima* Tul., Ann. Sci. Nat. III. 7: 76. 1847.

*Uredo fusco-virens* Cesati, Klotzsch-Rabenh. Herb. Viv. Mycol. 1497. 1850.

*Ustilago filiformis* Rostr., Bot. Foren. Fests. 136. 1890.

*Ustilago glyceriae* Cif., Ann. Mycol. 29: 31. 1931.

#### CULTURE ON ARTIFICIAL MEDIA

311 Brefeld 1883

1501 Kniep 1926

1428 Kammerling 1929

155 Bauch 1931

2690 Schopfer and Blumer 1938

#### CYTOLOGY

2682 Schmitz 1879

2231 Paravicini 1917

149 Bauch 1923

2732 Seyfort 1927

#### HETEROTHALLISM AND SEX

159 Bauch 1934

311 Brefeld 1883 (fusions between sporidia)

2231 Paravicini 1917 (fusions between sporidia)

149 Bauch 1923

1501 Kniep 1926

1428 Kammerling 1929

153 Bauch 1930 (multipolar sexuality)

154 Bauch 1930

155 Bauch 1931

158 Bauch 1932

#### HYBRIDIZATION AND GENETICS

159 Bauch 1934 (sporidial fusions with bipolar species)

1501 Kniep 1926 (sporidial fusions with other species)

1428 Kammerling 1929 (with *Ustilago longissima* var. *macrospora*)

155 Bauch 1931 (intraspecific)

158 Bauch 1932 (genetic bases for hybridization and sterility)

#### LIFE HISTORY, PARASITISM AND FACTORS AFFECTING

1929 Meyen 1841

614 DeBary 1853

803 Fischer v. Waldheim 1869

311 Brefeld 1883

2554 Rostrup 1885

2329 Plowright 1889

2559 Rostrup 1890

2872 Strohmeyer 1896

1975 Molliard 1898

1148 Hennings 1903

321 Brefeld 1912

149 Bauch 1923

1720 Liro 1924

155 Bauch 1931



## MISCELLANEOUS

- Morphology and symptoms 311 Brefeld 1883  
 Toxicity of infected plants 1823 Magnus 1895  
 Causing modification of bundle structure in *Glyceria aquatica*  
 1975 Molliard 1898  
 Toxicity of infected plants 2693 Schoug 1899  
 Toxicity of infected plants to cattle 705 Eriksson 1900  
 Toxicity of infected plants to cattle 2550 Rostowzew 1902  
 Toxicity of infected plants 1129 Hedlund 1908  
 Toxicity of infected plants 1607 Lagerheim 1909  
 Toxicity of infected plants 1694 Lindau 1912  
 Toxicity of infected plants 1690 Lind 1913  
 Spores not poisonous to animals 162 Baudys 1921  
 Evidence for and against toxicity of infected plants to cattle 1720  
 Liro 1924  
 History, hosts and morphology 1720 Liro 1924  
 Simultaneous occurrence with var. *macrospora* in same collection  
 and even on same plant 151 Bauch 1926  
 Clamp connections on the mycelium 2732 Seyfert 1927  
 Simultaneous occurrence with var. *macrospora* in same collection  
 and even on same plant 1428 Kammerling 1929  
 Some collections on *Glyceria aquatica* show all three sex groups,  
 some show only two. Only two on *G. plicata* 1428 Kammerling  
 1929

## SPORE GERMINATION AND FACTORS AFFECTING

- 1225 Hoffmann 1860  
 616 DeBary 1866  
 803 Fischer v. Waldheim 1869  
 311 Brefeld 1883  
 619 DeBary 1884  
 2329 Plowright 1889  
 3335 Zopf 1893  
 2655 Schellenberg 1911  
 2231 Paravicini 1917  
 149 Bauch 1923

**USTILAGO LORENTZIANA** Thüm. Flora 63: 30. 1880 (see also  
*Ustilago bullata*)

*Ustilago holwayi* Dietel, Bot. Gaz. 18: 253. 1893.

*Ustilago hordeicola* Speg., Anal. Mus. Nac. Buenos Aires III. 12: 1909.

## HETEROTHALLISM AND SEX

- 1048 Hanna and Hurst 1949

## MISCELLANEOUS

- Common occurrence on *Hordeum jubatum* in Montana (under  
 name of *Ustilago segetum*) 30 Anderson 1889  
 Inoculations with *Ustilago tritici* and *U. nuda* on *Hordeum jubatum*,  
 wheat and barley; all negative results 851 Freeman and  
 Johnson 1909

Comparative morphology with *Ustilago bromivora* and *U. bullata*  
with which consolidation is recommended 780 Fischer 1937

**USTILAGO MACROSPORA** Desm. Pl. Crypt. II. 1727. 1850.

*Tilletia serpens* Karstens, Fung. Fenn. 599. 1866.

*Tilletia aculeata* Ule, Abh. Bot. Ver. Prov. Brand. 25: 213. 1884.

*Ustilago aculeata* Liro, Ann. Acad. Sci. Fenn. A. 17: 66. 1824.

**MISCELLANEOUS**

The binomial *Ustilago macrospora* is based on a collection of  
*Urocystis* 1720 Liro 1924

Morphology (as *Ustilago aculeata*) 796 Fischer and Hirschhorn  
1945

**SPORE GERMINATION AND FACTORS AFFECTING**

796 Fischer and Hirschhorn 1945 (as *Ustilago aculeata*)

**USTILAGO MAJOR** Schröt. Krypt. Fl. Schles. 31: 273. 1889.

**HETEROTHALLISM AND SEX**

1498 Kniep 1919

**LIFE HISTORY, PARASITISM AND FACTORS AFFECTING**

2655 Schellenberg 1911

**MISCELLANEOUS**

Morphology 315 Brefeld 1895

Symptoms and morphology 2655 Schellenberg 1911

History and morphology 1720 Liro 1924

**SPORE GERMINATION AND FACTORS AFFECTING**

2329 Plowright 1889

315 Brefeld 1895

**USTILAGO MARGINALIS** (DC.) Lev. D'Orbigny in Diot. Univ.  
Hist. Nat. 12: 778. 1848.

*Uredo bistortarum* f. *marginale* DC., Fl. France 6: 76. 1815.

*Uredo pteridiformis* Funck, Krypt. Gewächse 27: 4. (No. 564). 1819.

*Caeoma marginale* Link, in Willd., Sp. Pl. 6: 10. 1825.

*Uredo marginalis* Rabenh., Krypt. Fl. 1: 7. 1844.

*Ustilago bistortarum* Rabenh., Krypt. Fl. 1: 95. 1881. p.p.

*Ustilago marginalis* Schröt., Krypt. Fl. Schles. 3: 272. 1889.

**CYTOLOGY**

2231 Paravicini 1917

**HETEROTHALLISM AND SEX**

2231 Paravicini 1917 (fusions between sporidia)

**LIFE HISTORY, PARASITISM AND FACTORS AFFECTING**

314 Brefeld 1895

315 Brefeld 1895

2655 Schellenberg 1911

321 Brefeld 1912

1720 Liro 1924

**SPORE GERMINATION AND FACTORS AFFECTING**

2704 Schröter 1887

315 Brefeld 1895

1841 Maire and Brockman-Jerosch 1907

2655 Schellenberg 1911

2231 Paravicini 1917

**USTILAGO MAYDIS (DC.) Corda Icones Fung. 5: 3. 1842.**

*Lycoperdon zeae* Beckm., Hannov. Mag. 6: 1330. 1768. (Pre-Persoonian)

*Uredo segetum* var. *mays-zeae* DC., Fl. Fr. 2: 506. 1805.

*Uredo zeae-mays* DC., Syn. Pl. Fl. Gall. 47: 1806.

*Uredo segetum* f. *zea mays* DC., Encycl. Metho. Bot. 8: 229. 1808.

*Uredo maydis* DC., Fl. Fr. 6: 77. 1815.

*Uredo zeae* Schwein., Schr. Nat. Ges. Leipzig 1: 71. 1822.

*Caeoma zeae* Link, Sp. Pl. 6: 2. 1825.

*Uredo zeae* Chevallier, Fl. Paris 1: 403. 1826.

*Erysibe maydis* Wallr., Fl. Crypt. Germ. 2: 215. 1833.

*Ustilago zeae* Unger., Einf. Bodens 211. 1836.

*Ustilago carbo-maydis* Phillipar, Traite Caris. Charbon 68. 1837.

*Ustilago maydis* Lev., Ann. Sci. Nat. II. 11: 13. 1839.

*Ustilago maydis* Corda, Icon. Fung. 5: 3. 1842.

*Ustilago schweinitzii* Tul., Ann. Sci. Bot. III. 7: 86. 1847.

*Ustilago reiliana* f. *zeae* Pass., Bull. Com. Agric. Parmense, 1-3 (extra). 1876.

*Ustilago zeae mays* Wint., Rabenh. Krypt. Fl. 1: 97. 1881.

*Ustilago euchlaenae* Pass., Erb., Critt. Ital. 2: Fasc. 23-24, No. 1125. 1882.

*Ustilago maydis* f. *foliicola* D. Sacc., Mycol. Ital. 1269. 1886.

*Ustilago maydis* f. *androphila* D. Sacc., Mycol. Ital. 1270. 1886.

*Ustilago zeae-maydis* (DC.) Tul., in Roumeguere, Fungi. Europ. Gall. 4318. 1888. (Rev. Mycol. 10: 8. 1888).

*Ustilago mays-zeae* Magnus, in Verh. Bot. Ver. Prov. Brandenb. 37: 72. 1895.

**CONTROL**

205 Bessey 1889

2993 Von Thuemen 1889

1936 Kellerman 1891 (fungicidal sprays)

2223 Pammel and Stewart 1893

103 Arthur and Stuart 1896

2874 Stuart 1896 (fungicidal sprays)

104 Arthur and Stuart 1900

1140 Henning 1901

3193 Weiss 1902

1901 Melchers 1916

2307 Pichler and Wober 922 (use of ultra-violet and X-rays and radium)

2355 Potter and Melchers 1925 (including fungicidal sprays)

1007 Güssow and Connors 1927

819 Fleischmann 1937

1519 Kornfeld 1937

2707 Schultz 1937

2257 Perlet 1938

2255 Pepper and Haenseler 1944

**CULTURE ON ARTIFICIAL MEDIA**

311 Brefeld 1883

314 Brefeld 1895

- 1838 Maire 1898  
1003 Grüss 1902  
2310 Piemeisel 1917  
2621 Sartoris 1924  
2355 Potter and Melchers 1925  
455 Christensen and Stakman 1926  
3011 Tisdale and Johnston 1926  
692, 693 Eddins 1929  
1037, 1040 Hanna 1929  
2812 Stakman *et al.* 1929  
2811 Stakman *et al.* 1929  
2403 Ranker 1930 (comparative growth in expressed juice from  
resistant and susceptible corn lines)  
2404 Ranker 1930  
452 Christensen 1931  
1313 Hüttig 1931  
156 Bauch 1932  
2763 Sleumer 1932  
2822 Stakman *et al.* 1933  
1214 Hirschhorn and Hirschhorn 1935 (including spore forma-  
tion)  
441 Chilton 1938  
1329 Itzerott 1938 (influence of extract of coleoptiles on rate of  
growth)  
1452 Kernkamp 1938  
1712 Link *et al.* 1938  
2690, 2691 Schopfer and Blumer 1938 (growth factors)  
1215 Hirschhorn and Hirschhorn 1939 (effect of pH of medium  
and mutation on cultural characters)  
1216 Hirschhorn and Hirschhorn 1939  
1453 Kernkamp 1939  
2022 Moulton and Link 1940 (auxin production)  
2681 Schmitt 1940  
1454 Kernkamp 1942  
927 Gattani 1946 (physiologic differences between diploid lines)  
2821 Stakman *et al.* 1946 (tolerance to arsenites)

## CYTOLOGY

- 1838 Maire 1898  
2414 Rawitscher 1912  
2732 Seyfert 1927  
1460 Kharbush 1928  
1039, 1040 Hanna 1929  
452 Christensen 1931  
2763 Sleumer 1932  
3171 Walter 1934  
291 Bowman 1940

442 Chilton 1940

292 Bowman 1946

#### HETEROTHALLISM AND SEX

2732 Seyfert 1927

2809 Stakman and Christensen 1927

1039,1040 Hanna 1929

2811 Stakman *et al.* 1929 (sex governed by multiple factors)

2812 Stakman *et al.* 1929

452 Christensen 1931

1313 Hüttig 1931

156 Bauch 1932

2763 Sleumer 1932 (6 sex groups)

159 Bauch 1934

2823 Stakman *et al.* 1935

1453 Kernkamp 1939

291 Bowman 1940

442 Chilton 1940

2681 Schmitt 1940

292 Bowman 1946 (sporidial fusions)

#### HYBRIDIZATION AND GENETICS

2811 Stakman *et al.* 1929 (intra-specific)

2812 Stakman *et al.* 1929

452 Christensen 1931

1980 Moore 1932

159 Bauch 1934 (sporidial fusions with bipolar species)

2805 Stakman 1936

441 Chilton 1938

1452 Kernkamp 1938

1453 Kernkamp 1939 (intra-specific)

442 Chilton 1940 (delayed reduction of diploid nucleus)

2681 Schmitt 1940 (intra-specific hybridization for color, growth type and sex segregation)

443 Chilton 1943 (inheritance of lysis character)

2814 Stakman *et al.* 1943

2815 Stakman *et al.* 1943 (inheritance of white mutant character)

#### LIFE HISTORY, PARASITISM AND FACTORS AFFECTING

1317 Imhoff 1784

2476 Reissek 1847

1556 Kühn 1858

1558 Kühn 1866

1562 Kühn 1874

311 Brefeld 1883

173 Beck 1885

547 Craig 1886

313 Brefeld 1888

1506 Knowles 1889

2223 Pammel and Stewart 1893

- 3272 Yasuda 1894  
314 Brefeld 1895  
1218 Hitchcock and Norton 1896  
2720 Selby and Hickman 1897  
104 Arthur and Stuart 1900  
479 Clinton 1900  
600 Davis 1900  
1217 Hitchcock 1900  
1856 Marchis 1900  
1140 Henning 1901  
1003 Grüss 1902  
2418 Ray 1903  
322 Brefeld and Falk 1905  
439 Chiffot 1907  
440 Chiffot 1909  
1316 Iltis 1910  
3202 Werth 1913  
2309 Piemeisel 1914  
2310 Piemeisel 1917  
2353 Potter and Melchers 1917  
1790 MacMillan 1918  
260 Bois 1921  
230 Blaringhem 1923  
2621 Sartoris 1924  
2163 Novopokrovsky and Skaskin 1925  
2355 Potter and Melchers 1925  
505 Coffman *et al.* 1926  
1655 Leszczenko 1926  
3011 Tisdale and Johnston 1926  
189 Benigni 1927  
1007 Güssow and Conners 1927  
2648 Schaffnit and Volk 1927  
2732 Seyfert 1927  
998 Griffiths 1928  
1322 Immer and Christensen 1928  
692, 693 Eddins 1929  
1039, 1040 Hanna 1929  
1602 Kyle 1929  
2321 Platz 1929  
1603 Kyle 1930  
2402 Ranker 1930  
1916 Melhus and Davis 1931  
592 Davis 1932  
1893, 1894, 1895 Maze and Maze 1932  
2113 Nemec 1932 (pathological histology and development of the galls)  
2763 Sleumer 1932

- 2299 Piacco 1933  
 2833 Starr 1933  
 3171 Walter 1934  
     282 Borzini 1935  
     281 Borzini 1935  
     593 Davis 1935  
 1214 Hirschhorn and Hirschhorn 1935  
 3172 Walter 1935  
     594 Davis 1936  
     594 Smith 1936  
     819 Fleischmann 1937  
 2707 Schultz 1937  
 1519 Kornfeld 1937  
 1312 Hutchins and Lutman 1938  
 1330 Itzerott 1938  
 1329 Itzerott 1938  
 3141 Vohl 1938  
 1611 Landen 1939  
 2022 Moulton and Link 1940  
 2681 Schmitt 1940  
 1455 Kernkamp and Martin 1941 (paired haploid lines vs. composite of mixed haploids in pathogenicity)  
 2116 Nemlienko 1941  
 2255 Pepper and Haenseler 1944  
 3221 Wilkinson and Kent 1945  
 1922 Menzies and Stanberry 1947  
     753, 754 Feldman 1948  
 2077 Munnecke 1948
- MISCELLANEOUS
- Host abnormalities induced 2476 Reissck 1847  
 Lethal effect on young corn seedlings 1562 Kühn 1874  
 Medicinal properties 964 Goss 1881  
 Medicinal properties 1018 Hahn 1881  
 Evidence against toxicity to cattle 1151 Henry 1881  
 Medicinal properties 1387 Johnson 1882  
 Chemical analysis 2237 Parsons 1882  
 Inoculation methods and experiments 311 Brefeld 1883  
 Medicinal properties 934 George 1884  
 Medicinal properties 1388 Johnson 1884  
 Spores still viable after passing through digestive tract of cows  
     2002 Morini 1884  
 Connection with pellagra 2232 Pari 1884  
 Physiological effects upon nervous system 1960 Mitchel 1886  
 "Ustilagini,"-active medicinal principle 2396 Rademaker and  
     Fischer 1887  
 Inoculation experiments 313 Brefeld 1888

- Evidence for and against toxicity of corn smut to cattle 205  
 Bessey 1889
- Pathological histology 1506 Knowles 1889
- Lethal effect on young corn seedlings 314 Brefeld 1895
- Early appearance in Germany 1824 Magnus 1895
- Corn smut not toxic to cattle 1998 Moore and Schweinitz 1896
- Corn smut not toxic to cattle 2764 Smith 1896
- Effect on uterine contractions 305 Braunstein 1897
- Comparative dimensions of sporidia from different culture media  
 1838 Maire 1898
- Lethal effect on young corn seedlings 104 Arthur and Stuart 1900
- Spores not viable after passing through digestive tract of cow  
 104 Arthur and Stuart 1900
- Effect on yield 479 Clinton 1900
- Analysis of toxic constituents of corn smut 2876 Stuart 1901
- Production of chlamydospores in culture 1003 Grüss 1902
- Source of an alkaloid 1857 Marchis 1904
- Chemistry of 3320 Zellner 1910
- Proliferation caused by 1316 Iltis 1910
- Corn smut poisonous to cattle 2219 Pammel 1911
- Medicinal properties 727 Faminzin 1912
- Toxicity of spores to animals 1726 Liskun and Krastavitsky 1914
- Lethal effect on young corn seedlings 2310 Piemeisel 1917
- No loss of virulence by prolonged culturing on synthetic media  
 2310 Piemeisel 1917
- Spores lost viability after few weeks in silo 2310 Piemeisel 1917
- Epidemic following hail storm 1790 MacMillan 1918
- Effect of ultra-violet and X-rays and radium on germinability  
 2307 Pichler and Wober 1922
- Corn smut spores in the air at high altitudes 2813 Stakman *et al.*  
 1923
- Discovery in the gold coast of Africa 575 Dade 1924
- Effect on yield 1092 Hayes *et al.* 1924
- Production of chlamydospores in culture 2621 Sartoris 1924
- Oospora verticillioides parasitic on in Russia 622 Deckenbach  
 1925
- Use of hypodermic needle to inoculate 455 Christensen and Stak-  
 man 1926
- Influence of weather conditions on incidence of infection 505  
 Coffman *et al.* 1926
- Effect of smut on sap concentration 1305 Hurd-Karrer 1926
- Carrot decoction cultures better inoculum than spores or agar cul-  
 tures 3011 Tisdale and Johnston 1926
- Greenhouse testing of varietal reaction 3011 Tisdale and Johnston  
 1926
- Use of hypodermic needle to inoculate 3011 Tisdale and Johnston  
 1926



- Cardinal temperatures for spore germination 189 Benigni 1927  
Longevity of the spores 189 Benigni 1927  
Effect of smut infection on sugar content of corn stalks 1306  
Hurd-Karrer and Hasselbring 1927  
Differences between highly susceptible and resistant varieties re  
number and size of galls 1319 Immer 1927  
Use of hypodermic needle to inoculate 1319 Immer 1927  
Formation of clamp connections in mycelium 2732 Seyfert 1927  
Influence of corn smut on yield 894 Garber and Hoover 1928  
Smut susceptibility of naturally resistant corn when artificially  
inoculated 998 Griffiths 1928  
Determination of losses due to smut infection 1321 Immer and  
Christensen 1928  
Pathogenicity of monosporidial vs. multisporidial cultures 693  
Eddins 1929  
Solopathogenic lines 693 Eddins 1929  
Use of hypodermic needle to inoculate 693 Eddins 1929  
Effect of digestive processes on spore viability 766 Ficke and  
Melchers 1929  
Spores non-toxic to horses 766 Ficke and Melchers 1929  
Use of hypodermic needle to inoculate 998 Griffiths 1929  
Production of sporidia on infected corn leaves floated on distilled  
water 1040 Hanna 1929  
Effect of smut on yield 1415 Jorgensen 1929  
Ears with short husks more liable to smut 1602 Kyle 1929  
Sectoring and mutation 2811, 2812, Stakman *et al.* 1929  
Solopathogenic lines 2811 Stakman *et al.* 1929  
Inoculation by hypodermic injection 3318 Zehner and Humphrey  
1929  
Bacterial antibiosis 131 Bamberg 1930  
Susceptibility directly related to vigor of host plant 1603 Kyle  
1930  
Nature of resistance 2403 Ranker 1930  
Physiological and morphological resistance in the host 2403  
Ranker 1930  
Synthetic nutrient media for cultures 2404 Ranker 1930  
Bacterial antibiosis 132 Bamberg 1931  
Genetic studies 452 Christensen 1931  
Solopathogenic lines 452 Christensen 1931  
Factors for sex segregated independently of those for cultural  
characters 1313 Hüttig 1931  
Type of germination markedly influenced by temperature 1313  
Hüttig 1931  
Effect on yield 1323 Immer and Christensen 1931  
Reaction of the host plant 1323 Immer and Christensen 1931  
Nodal infection 1916 Melhus and Davis 1931

- Relation of surface tension of sporidial suspensions to per cent smutted plants 1916 Melhus and Davis 1931
- Incidence in Cyprus 2089 Nattrass 1931
- Prevalent and severe in Soviet Russia 277 Borghardt 1932
- Chemical composition of the spores 412 Campanile 1932
- Relation of axillary bud development to nodal smut infection 592 Davis 1932
- Nature of resistance 1894 Maze and Maze 1932
- Genetic studies 1980 Moore 1932
- Development of smut galls 2113 Nemec 1932
- Pathological histology of galls 2113 Nemec 1932
- Tetraploidy and polyploidy in affected host cells 2113 Nemec 1932
- Solopathogenic lines 2763 Sleumer 1932
- Spores contain a substance acting similarly to ergotamine on adrenalin hyperglycaemia 137 Bajaktarovic and Bogdanovic 1933
- Fresh spores germinate less readily than those kept at room temperature for several days 704 Enomoto 1934
- Stimulatory effects of ether 704 Enomoto 1934
- Medicinal properties 1675 Levy and Bogdanovic 1934
- Causes estimated annual loss in U.S. of about 55,000,000 bushels 3171 Walter 1934
- Size of smut galls not sole measure of resistance or susceptibility 453 Christensen and Johnson 1935
- Oospora verticilioides*, parasitic on corn smut 622 Deekenbach 1935
- Aqueous extract of spore material more toxic than ergot extract to mice 679 Dragisic and Varicak 1935
- Influence of corn smut on yield 896 Garber and Hoover 1935
- Determination of reduction in yield 1386 Johnson and Christensen 1935
- Direct correlation of high osmotic pressure of seed with smut susceptibility 2405 Ranninger and Lerner 1935
- Review of various inoculation methods and results obtained 3172 Walter 1935
- Poor stands associated with heavy smut infections 396 Burk *et al.* 1936
- Longevity of spores; at least 2 years 779 Fischer 1936
- Incidence in south Germany 1527 Kotte 1936
- Number of barren stalks of corn directly proportional to percentage of infection in field 2768 Smith 1936
- Susceptibility of teosinte 819 Fleischmann 1937
- Hail storms increase incidence 1519 Kornfeld 1937
- Longevity of spores under variable conditions 1519 Kornfeld 1937
- Case of dermatomycosis caused by 2362 Preininger 1937

- Review of 64 papers on corn smut 2702 Schultz 1937
- Composed of indefinite number lines especially adapted to genetic and mutation studies 2806 Stakman 1937
- Causing respiratory allergy 3248 Wittich and Stakman 1937
- Seriological differentiation in closely related species 172 Beck 1938
- Lysis in promycelia of hybrid chlamydospores 441 Chilton 1938
- Solopathogenic lines 441 Chilton 1938
- Toxic effect of extracts of corn smut on various animals 1302 Hunt and Thompson 1938
- Abortion in animals and other injurious effects 1302 Hunt and Thompson 1938
- Review of pharmacological investigations on *Ustilago maydis* 1302 Hunt and Thompson 1938
- Spine development on spores 1312 Hutchins and Lutman 1938
- Influence of extract of coleoptiles and auxins and vitamins on growth in culture 1329 Itzerott 1938
- Influence of pH on spore germination and formation of sporidia 1330 Itzerott 1938
- Production of auxones in culture 1712 Link *et al.* 1938
- Fifteen cases of smut poisoning of children in Jugoslavia 1891 Mayerhofer and Dragisic 1938
- Smutty corn not safe to use for fodder to feed livestock 2257 Perlet 1938
- Growth factors 2690, 2691 Schopfer and Blumer 1938
- Linkage relations between smut resistance and semi-sterility in corn 398 Burnham and Cartledge 1939
- Sensitivity to ultra-violet light 1611 Landen 1939
- Spores not toxic to guinea pigs 1331 Itzerott 1939
- As cause of hay fever and asthma 3246 Wittich 1939
- Incidence in Italian E. Africa 425 Castellani 1940
- Delayed reduction of the diploid nucleus 442 Chilton 1940
- Inoculation method 643 Dickson and Bowman 1940
- Production of auxins in culture 2022 Moulton and Link 1940
- Attempts to produce chlamydospores on agar uniformly unsuccessful 2681 Schmitt 1940
- Comparative rate of mutation between sporidial and mycelial lines 2681 Schmitt 1940
- Rate of mutation not affected by X-ray, ultra-violet or high temperature near thermal death point 2681 Schmitt 1940
- 3/4000 monosporidial lines solopathogenic 2681 Schmitt 1940
- Artificial culture for medicinal use 2711 Scossiroli 1940
- Cause of respiratory allergy 3160 Waldbott and Ascher 1940
- Various types of germination and promycelia produced rather than supposedly normal four-celled promycelium 1456 Kernkamp and Petty 1941
- Physical and chemical adaptation in cultures 2293 Petty 1942

- A source of mitogenetic radiation 428 Cercos and Favret 1946  
 Physiologic (cultural) differences between diploid lines 927 Gattani 1946  
 Host range 1917 Melhus and Kent 1946  
 Build-up of tolerance to arsenites through continuous exposure 2821 Stakman *et al.* 1946  
 Inoculation method 2844 Stevens *et al.* 1946  
*Ustilago euchlaenae* Passerini is synonym 1213 Hirschhorn 1947  
 Physiological studies of hybrid lines 753, 754 Feldman 1948

## PHYSIOLOGIC SPECIALIZATION

- 1902 Melchers 1921  
 455 Christensen and Stakman 1926 (on cultural basis plus pathogenicity)  
 2808 Stakman and Christensen 1926  
 2809 Stakman and Christensen 1927 (on cultural basis)  
 3115 Verplancke 1930 (biometric study)  
 2823 Stakman *et al.* 1935 (on cultural basis)  
 1216 Hirschhorn and Hirschhorn 1939 (510 races on basis of cultural characters)

## SPORE GERMINATION AND FACTORS AFFECTING

- 3251 Wolff 1873  
 1573 Kühn 1876  
 311 Brefeld 1883  
 313 Brefeld 1888  
 314 Brefeld 1895  
 2851 Stewart 1895  
 2159 Norton 1896  
 1838 Maire 1898  
 2655 Schellenberg 1911  
 2803 Stakman 1913  
 2309 Piemeisel 1914  
 2310 Piemeisel 1917  
 1406 Jones 1923  
 2163 Novopokrovsky and Skaskin 1925  
 1654 Leszczenko 1926  
 2322 Platz *et al.* 1927 (stimulating effect of carbonic acid)  
 2320 Platz 1928 (importance of oxygen)  
 452 Christensen 1931  
 1313 Hüttig 1931 (marked influence of temperature on)  
 2763 Sleumer 1932  
 281, 282 Borzini 1935  
 1330 Itzerott 1938 (effect of acidity on spore germination)  
 2681 Schmitt 1940

## VARIETAL RESISTANCE, SUSCEPTIBILITY AND INHERITANCE OF

- 1402 Jones 1918  
 1403 Jones 1920  
 1092 Hayes *et al.* 1924

- 897 Garber and Quisenberry 1925  
 1320 Immer and Christensen 1925  
 505 Coffman *et al.* 1926  
 997 Griffiths 1927  
 1319 Immer 1927  
 998 Griffiths 1928  
 2321 Platz 1929  
 1603 Kyle 1930  
 2403 Ranker 1930 (morphological versus physiological resistance)  
 1263 Hoover 1932  
 2405 Ranninger and Lerner 1935 (correlation of susceptibility with high osmotic pressure of seed)  
 396 Burk *et al.* 1936  
 2591 Saboe and Hayes 1941  
 1917 Melhus and Kent 1946  
 1091 Hayes, Rinke and Tsiang 1946  
 1919 Melhus and Semeniuk 1946

**USTILAGO MEDIANIS** Biedenkopf Zeitschr. f. Pflanzenkr. 4: 321. 1894.

CULTURE ON ARTIFICIAL MEDIA

24 Allison 1937

HETEROTHALLISM AND SEX

24 Allison 1937

HYBRIDIZATION AND GENETICS

23 Allison 1935

24 Allison 1937 (with *Ustilago hordei*)

24 Allison 1937 (incomplete hybridization with *Ustilago avenae*, *U. kollerii*, *U. nuda*, *U. tritici*, i.e., sporidial fusions but little or no infection)

LIFE HISTORY, PARASITISM AND FACTORS AFFECTING

24 Allison 1937

MISCELLANEOUS

Description and account of symptoms 219 Biedenkopf 1894

Distribution in the United States 1987 Moore and Allison 1935

Based on a mixed collection of *Ustilago nuda* and *U. nigra* and therefore invalid binomial 2935 Tapke 1943

**USTILAGO MICROTHELIS** H. and P. Sydow Ann. Mycol. 22: 280. 1924

MISCELLANEOUS

Comparison with other smuts on *Saccharum* and *Erianthus* 2897 Sydow 1924

Comparison with other sugar cane smuts and first report from Argentina 1201 Hirschhorn 1942

**USTILAGO MINIMA** Arthur Bull. Iowa Agric. Coll. Dep. Bot. Bull. 1884: 172.

*Ustilago stipae* Cif., Ann. Mycol. 29: 52. 1931.

#### MISCELLANEOUS

Pathological histology; geographic distribution; comparison with other stem smuts on *Stipa* and *Oryzopsis* 790 Fischer 1945

Reasons for considering *Ustilago stipae* Cif. as synonym 1213 Hirschhorn 1947

**USTILAGO MINOR** Norton Trans. Acad. Sci. St. Louis 7: 238. 1896.

*Ustilago hieronymi* var. *minor* Cif., Trans. Brit. Mycol. Soc. 18: 262. 1934.

#### MISCELLANEOUS

Comparison with other smuts on *Bouteloua* 472 Ciferri 1934

#### SPORE GERMINATION AND FACTORS AFFECTING

2159 Norton 1896

**USTILAGO MORINAE** Padwick and Azmatullah Khan Imp. Mycol. Inst. (New Delhi) Mycol. Papers No. 10: 1. 1944.

#### MISCELLANEOUS

Technical description 2203 Padwick and Khan 1944

**USTILAGO NEGLECTA** Niessl Rabenh. Fungi Europ. 1200. 1868.

*Uredo decipiens* f. *graminum* Strauss, Ann. Wetterausch. Gesell. Naturk. 2: 111. 1811. p.p.

*Erysibe panicorum* f. *panici glauci* Wallr., Fl. Krypt. Germ. 2: 216. 1833.

*Ustilago panici glauci* Wint., in Rabenh. Krypt. Fl. 1: 97. 1881.

#### CULTURE ON ARTIFICIAL MEDIA

1871 Martin and Kernkamp 1941

#### CONTROL

277 Borghardt 1932

#### MISCELLANEOUS

Symptoms and morphology 2655 Schellenberg 1911

Longevity of spores; at least 7 years 779 Fischer 1936

#### SPORE GERMINATION AND FACTORS AFFECTING

311 Brefeld 1883

2159 Norton 1896

1517 Kolk 1943

**USTILAGO NIGRA** Tapke Phytopath. 22: 869. 1932 and 33: 208. 1933. Also Jour. Agric. Res. 51: 491-508. 1935.

*Ustilago medians* Biedenkopf, p.p., Zeitschr. f. Pflanzenkr. 4: 321-322. 1894.

#### CONTROL

2920 Tapke 1932

2922 Tapke 1935

1664 Leukel 1936

3288 Young and McClelland 1940

#### CULTURE ON ARTIFICIAL MEDIA

2587 Ruttle 1934

## CYTOLOGY

2587 Ruttle 1934

## HETEROTHALLISM AND SEX

2587 Ruttle 1934

## HYBRIDIZATION AND GENETICS

23 Allison 1935

24 Allison 1937

1300 Hungerford 1938 (with *Ustilago hordei*)213 Bever 1942 (buff-colored nonpathogenic segregate from cross with *Ustilago hordei*)

2937 Tapke 1944

215 Bever 1945 (with *Ustilago hordei*)

## LIFE HISTORY, PARASITISM AND FACTORS AFFECTING

3017 Tisdale and Tapke 1924 (under the name of *Ustilago nuda*)3018 Tisdale and Tapke 1925 (mistaken for *Ustilago nuda*)

1663 Leukel 1932

2587 Ruttle 1934

2922 Tapke 1935

1664 Leukel 1936

1420 Josephson 1942 (influence of temperature and moisture)

## MISCELLANEOUS

Comparison with *Ustilago nuda* 2921 Tapke 1932

Technical description 2921 Tapke 1932

*Ustilago medians* Biedenkopf probably should have priority 2587 Ruttle 1934

Inoculation method 2927 Tapke 1937

Artificial infection of *Elymus canadensis*, *Hordeum nodosum*, *Sitonia jubatum* 781 Fischer 1939Earlier confusion with *Ustilago nuda* and the supposition that *U. nuda* was responding to chemical seed treatment 2933 Tapke 1941Technique for rapid differentiation from *Ustilago nuda* 2934 Tapke 1941Comparative morphology with *Ustilago avenae* and *U. perennans* with which consolidation is recommended 788 Fischer 1943

Badly contaminated seed unsuited for malting purposes 1897 Mead 1943

*Ustilago medians* although an earlier name is invalid because based on mixture 2935 Tapke 1943

Incidence in Quebec and Manitoba 517 Connors and Saville 1944

Incidence in Palestine 1959 Minz 1944

Spore load as indication of need of seed treatment 433 Cherewick 1948

## PHYSIOLOGIC SPECIALIZATION

2924 Tapke 1936

1420 Josephson 1942

2936 Tapke 1943

## SPORE GERMINATION AND FACTORS AFFECTING

- 219 Biedenkopf 1894 (under name of *Ustilago medians* n. sp.)  
 2587 Ruttle 1934  
 2922 Tapke 1935  
 2934 Tapke 1941  
 2935 Tapke 1943  
 215 Bever 1945

## USTILAGO NUDA (Jens.) Rostr. Tidsskr. f. Landøkon. 8: 745. 1889.

- Uredo carbo* DC., Fl. France 6: 76. 1815. p.p.  
*Ustilago segetum* Link, Ditmar in Sturm's Deutschland Fl. III, 1: 67. 1817. p.p.  
*Caecoma segetum* Link, in Willd., Sp. Pl. 6: 1. 1825. p.p.  
*Erysibe vera* f. *hordei* Wallr., Fl. Krypt. Germ. 2: 217. 1833. p.p.  
*Uredo carbo-hordei* Phillipar, Mem. Soc. Roy. Agric. Arts Seine-et-Oise 37: 195. 1837. p.p.  
*Ustilago hordei* Bref., Nachr. Klub. Landw. (Berlin) 1593: 1888. p.p.  
*Ustilago segetum* var. *hordei* f. *nuda* Jensen, Om Korn. Brand. 61. 1888.  
*Ustilago segetum* var. *nuda* Jensen, Jour. Roy. Agric. Soc. England 24: 406. 1888.  
*Ustilago hordei* var. *nuda* Jensen, Charb. Cereales 4: 1889.  
*Ustilago nuda* Kell. and Sw., Ann. Rept. Kans. Agric. Expt. Sta. 2: 277. 1890.  
*Ustilagidium hordei* Zopf, in Herzberg, Beitr. Phys. Morph. Neiderer Org. 5: 7. 1895.  
*Ustilago nuda* var. *foliicola* Trotter, Ann. Mycol. 11: 415. 1913.

## CONTROL

- 1858, 1859 Mäcker 1887  
 1447 Kellerman and Swingle 1890  
 3025 Toporkow 1903  
 851 Freeman and Johnson 1909  
 2792 Sperling 1910  
 68, 69 Appel and Riehm 1911  
 2862 Störmer 1911  
 71 Appel and Riehm 1912  
 2864 Störmer 1912  
 72 Appel and Riehm 1914  
 1693 Lind 1915  
 2386 Quanjer and Batjes 1915  
 1901 Melchers 1916  
 2307 Pichler and Wober 1922 (use of ultra-violet, X-rays and radium)  
 115 Ausborn 1923  
 2040 Müller *et al.* 1923  
 3021 Tisdale, Taylor and Griffiths 1923  
 2526 Rodenhiser and Stakman 1925  
 512 Conners 1926  
 1007 Güssow and Conners 1927  
 1648 Leidner 1927  
 2619 Sappok 1928



- 972 Gram 1929  
2951 Taylor and Zehner 1930  
2919 Tapke 1931 (through production of seed wheat in low-humidity smut-free areas)  
1663 Leukel 1932  
2103 Neill 1932  
3085 Vanderwalle 1932  
922 Gassner and Kirchhoff 1934  
1164 Hewlett and Hewlett 1934  
651 Dieudonne and Vanderwalle 1935  
3086, 3087, 3088 Vanderwalle 1935  
2179 Oort 1936  
2715 Selaries 1937  
2129 Niemeyer 1938  
3024 Toomre 1938  
3186, 3187 Weck 1938  
434 Chester 1940 (portable hot water seed treater)  
3288 Young and McClelland 1940  
1262 Honecker 1943  
195 Bergal 1944  
1627 Larose *et al.* 1946  
2583 Russell 1947  
2705 Schuk 1947

## CULTURE ON ARTIFICIAL MEDIA

- 1158 Herzberg 1895  
68 Appel and Riehm 1911  
2489 Riehm 1914  
1501 Kniep 1926  
2512 Rodenhiser 1926 (chlamydospores produced)  
2513 Rodenhiser 1928  
2587 Ruttle 1934  
2986 Thren 1937  
2690, 2691 Schopfer and Blumer 1938 (auxo-autotrophic)

## CYTOLOGY

- 2414 Rawitscher 1912  
367 Broili and Schikorra 1913  
2231 Paravicini 1917  
2416 Rawitscher 1922  
2586 Ruttle 1934  
2989 Thren 1941 (cytology of the dicaryophase)

## HETEROTHALLISM AND SEX

- 2231 Paravicini 1917 (copulation between promycelial cells)  
1501 Kniep 1926  
2986 Thren 1937

## HYBRIDIZATION AND GENETICS

- 1501 Kniep 1926 (incomplete hybridization with *Ustilago hordei* and *U. bullata*)

- 2586 Ruttle 1934 (with smut intermediate between *Ustilago nigra* and *U. nuda*)  
 24 Allison 1937 (with *Ustilago hordei*—unsuccessful)  
 2989 Thren 1941 (copulation with *Ustilago tritici*, *U. hordei*, *U. medians*)

## LIFE HISTORY, PARASITISM AND FACTORS AFFECTING

- 1361 Jensen 1887  
 1363 Jensen 1888  
 1447 Kellerman and Swingle 1890  
 2560 Rostrup 1890  
 2330 Plowright 1892  
 1792 Maddox 1895  
 1795 Maddox 1897  
 2571 Rostrup 1902  
 318 Brefeld 1903 (early demonstration of intraseminal infection)  
 1120 Hecke 1904 (early demonstration of intraseminal infection)  
 322 Brefeld and Falk 1905  
 1121 Hecke 1905  
 1271 Hori 1907 (early demonstration of intraseminal infection)  
 851 Freeman and Johnson 1909  
 2968 Theomin 1909  
 364 Broili 1910  
 1763 McAlpine 1910  
   68 Appel and Riehm 1911  
 365 Broili 1911  
   71 Appel and Riehm 1912  
 321 Brefeld 1912  
 367 Broili and Schikorra 1913  
   72 Appel and Riehm 1914  
 1691 Lind 1915 (influence of chemical fertilizers)  
 1616 Lang 1917  
 1886 Hiltner and Land 1922 (effect of ammonium sulfate on)  
 1488 Kitunen 1922  
 1618 Lang 1923  
 2163 Novopokrovsky and Skaskin 1925 (effect of temperature on germination of spores)  
 3017, 3018 Tisdale and Tapke 1925 (infection of barley through seed inoculation—later shown to be *Ustilago nigra*)  
 2714 Seiffert 1927  
 1469 Kirby 1927 (soil temperatures)  
 3009, 3010 Tisdale and Griffiths 1927 (variations in life history; later shown to be due to mixtures with *Ustilago nigra*)  
 1791 Macrae 1930  
 2919 Tapke 1931  
 1663 Leukel 1932  
 3085 Vanderwalle 1932

- 922 Gassner and Kirchhoff 1934  
 2586, 2587 Ruttle 1934  
 3087 Vanderwalle 1935  
 1632 Lasser 1938  
 3024 Toomre 1938  
 2180 Qort 1939  
 2181 Oort 1940  
 3089 Vanderwalle 1940  
 2988, 2989 Thren 1941  
 2738 Shands and Schaller 1946 (inoculation with dry spores in  
 hypodermic needle)  
 2940 Tapke 1948

## MISCELLANEOUS

- Differentiation from *Ustilago hordei* and early data 1363 Jensen  
 1888  
 Early history 1447 Kellerman and Swingle 1890  
 Histological detection of mycelium in barley embryos 366 Broili  
 1918  
 Effects of ultra-violet and X-rays and radium on spore germination  
 2307 Pichler and Wober 1922  
 Expressing symptoms of *Ustilago hordei* 1618 Lang 1923  
 Hosts and morphology and comparison with *Ustilago tritici* 1720  
 Liro 1924  
 Chlamydospores produced in culture 2512 Rodenhiser 1926  
 Morphologically indistinct from *Ustilago tritici* 2512 Rodenhiser  
 1926  
 Rare in Ireland 2079 Murphy 1927  
 Morphologically indistinct from *Ustilago tritici* and considered  
 synonym 2513 Rodenhiser 1928  
 Production of chlamydospores in culture 2513 Rodenhiser 1928  
 Inoculation by hypodermic injection 3318 Zehner and Humphrey  
 1929  
 Early maturing spores less viable than later 1791 Macrae  
 1930  
 Germination more profuse when spores are agglutinated than when  
 isolated or scattered 1791 Macrae 1930  
 Recognition of diseased plants before emergence of spikes 752  
 Feistritz 1931  
 Influence of humidity on floral infections 2919 Tapke 1931  
 Effect of depth of seedling on per cent smut 2952 Taylor and  
 Zehner 1931  
 High percentage of infection from seed several years old, but not  
 in original and first year seed 1494 Kling 1932  
 Seed infection 1663 Leukel 1932  
 Comparison with *Ustilago nigra* n. sp. 2921 Tapke 1932  
 Beetle extensively feeding on and possibility of biological control  
 3085 Vanderwalle 1932

- Trichothecium roseum* parasitic 3085 Vanderwalle 1932  
A late form intermediate in morphology between *Ustilago nuda*  
and *U. hordei* 3085 Vanderwalle 1932  
Fungus and insect enemies 3085 Vanderwalle 1932  
Late form considered natural hybrid with *Ustilago hordei* 3085  
Vanderwalle 1932  
Late type attacking only lower part of head (possible hybrid be-  
tween *Ustilago nuda* and *U. hordei*) 3085 Vanderwalle 1932  
Leaves infected in greenhouse 3085 Vanderwalle 1932  
Inoculation methods 3319 Zeiner 1932  
Longevity of spores 3319 Zeiner 1932  
Recognition of diseased plants before emergence of spikes 3319  
Zeiner 1932  
Comparative morphology with field collections of *Ustilago hordei*  
2585 Ruttle 1933  
Flotation method of separating out infected grains 3312 Zalewsky  
and Wasjuta 1933  
Fresh spores germinate less readily than those kept at room tem-  
perature for several days 704 Enomoto 1934  
Stimulatory effects of ether 704 Enomoto 1934  
Heads infected fall into at least two color groups 1987 Moore and  
Allison 1935  
Differentiation from *Ustilago nigra* 2922 Tapke 1935  
Inoculation method 2923 Tapke 1935  
Direct inoculation of embryo 3088 Vanderwalle 1935  
Portable evacuation apparatus for field inoculations 1981, 1992  
Moore 1936  
A physiologic form in Holland germinating like *Ustilago hordei*  
(probably *U. nigra* but not so stated) 2179 Oort 1936  
Method of separating the four promycelial cells 2986 Thren 1937  
Need for using diluted inoculum when breeding for resistance is  
involved 2987 Thren 1937  
Case of respiratory allergy 3248 Wittich and Stakman 1937  
Effect of light and vernalization on infection 1632 Lasser 1938  
Growth factors 2690, 2691 Schopfer and Blumer 1938  
Modification of Moore's method of inoculation 2180 Oort 1939  
As cause of hay fever and asthma 3246 Wittich 1939  
Technique for differentiation from *Ustilago nigra* 2934 Tapke  
1941  
A distinct species from *Ustilago tritici* 2989 Thren 1941  
Inoculation method 2722 Semeniuk and Ross 1942  
Relation of percentage infection to yield reduction 2722 Semeniuk  
and Ross 1942  
Use of male-sterile barley variety for purposes of combined hy-  
bridization and inoculation 2884 Suneson and Houston 1942  
Morphologically indistinct from and therefore synonymous with  
*Ustilago tritici* 788 Fischer 1943

- Badly contaminated seed unsuited for malting purposes 1897  
Mead 1943  
Hypodermic needle inoculation method 2334 Poehlman 1945  
Rapid floral inoculation methods 3091 Vanderwalle 1945  
Use of dry spores in hypodermic needle for inoculation 2738  
Shands and Schaller 1946  
Two methods for detecting mycelium in barley embryos 2755  
Simmonds 1946  
Prolonging viability by refrigeration 2940 Tapke 1948  
Albino mutant 1882 Mastenbroek 1949  
High pressure jet inoculation method 1989 Moore and Munecke  
1949

## PHYSIOLOGIC SPECIALIZATION

- 2512 Rodenhiser 1926  
3009, 3010 Tisdale and Griffiths 1927  
2513 Rodenhiser 1928  
2087 Nahmmacher 1932  
1983 Moore 1936  
2988 Thren 1941

## SPORE GERMINATION AND FACTORS AFFECTING

- 3252 Wolff 1874  
313 Brefeld 1888  
1447 Kellerman and Swingle 1890  
2559 Rostrup 1890  
1932 Miczynski 1893  
3335 Zopf 1893  
1158 Herzberg 1895  
1763 McAlpine 1910  
68 Appel and Riehm 1911  
2655 Schellenberg 1911  
2414 Rawitscher 1912  
1615 Lang 1913  
2489 Riehm 1914  
1616 Lang 1917  
2231 Paravicini 1917  
2163 Novopokrovsky and Skaskin 1925  
1791 Macrae 1930

## VARIETAL RESISTANCE AND SUSCEPTIBILITY, AND INHERITANCE OF

- 364 Broili 1910  
365 Broili 1911  
2087 Nahmmacher 1932  
3319 Zeiner 1932  
2987 Thren 1937  
2181 Oort 1940  
1934 Middleton and Chapman 1941  
1727 Livingston 1942  
2950 Taylor and Harlan 1943

- 2739 Shands 1946 (genetic linkage of resistance to loose smut  
and stem rust in barley)  
2738 Shands and Schaller 1946 (tested 300 varieties)  
2335 Poehlman 1947

**USTILAGO ORNITHOGALI** (Schmidt and Kunze) Magnus Hed-  
wigia 14: 19. 1875.

- Uredo ornithogali* Schmidt and Kunze, Deut. Schwämme 217. 1816.  
*Caeoma ornithogali* Schlecht., Fl. Berol. 2: 125. 1824.  
*Ustilago umbrina* Schröt., Abh. Schles. Ges. Vat. Kult. 3. 1869.  
*Ustilago heterospora* Niessl, Beitr. Kennt. Pilze. Verh. Natur. Vereins  
Brünn) 10: 158. 1872.  
*Ustilago ornithogali* Kühn, Rabenh., Fung. Europ., 1996. 1875.

**LIFE HISTORY, PARASITISM AND FACTORS AFFECTING**

- 496 Cocconi 1889  
2872 Strohmeier 1896  
1148 Hennings 1903  
2655 Schellenberg 1911

**MISCELLANEOUS**

- Symptoms and morphology 2655 Schellenberg 1911  
Hosts and morphology 1720 Liro 1924

**SPORE GERMINATION AND FACTORS AFFECTING**

- 496 Cocconi 1889

**USTILAGO OXALIDIS** Ell. and Tr. Jour. Mycol. 6: 77. 1890.

- Ustilago oxalidis* var. *major* Dietel and Neger, Hedw. Beibl. 37: 147. 1898.

**MISCELLANEOUS**

- Morphology and symptoms 2655 Schellenberg 1911  
First report from France and historical background 3120 Viennot-  
Bourgin 1932  
Induced heterostyly 3066 Ubisch 1935  
First report from Estonia. Probably introduced with the host  
1652 Lepik 1937  
Distribution in Europe 1653 Lepik 1937

**LIFE HISTORY, PARASITISM AND FACTORS AFFECTING**

- 3066 Ubisch 1935

**USTILAGO PANICI-FRUMENTACII** Bref. Unters. Gesamt. Myk.  
12: 103. 1895.

**CULTURE ON ARTIFICIAL MEDIA**

- 315 Brefeld 1895

**LIFE HISTORY, PARASITISM AND FACTORS AFFECTING**

- 315 Brefeld 1895

**MISCELLANEOUS**

- Morphology 315 Brefeld 1895  
Comparison with *Ustilago paradoxa* 2057 Mundkur 1943  
Effect on host 2057 Mundkur 1943  
Revised description 2057 Mundkur 1943

## SPORE GERMINATION AND FACTORS AFFECTING

315 Brefeld 1895

2900 Sydow and Sydow 1911

**USTILAGO PANICI-LEUCOPHAEI** Bref. Unters. Gesamt. Myk.  
12: 114. 1895.

## CULTURE ON ARTIFICIAL MEDIA

315 Brefeld 1895

## MISCELLANEOUS

Morphology 315 Brefeld 1895

## SPORE GERMINATION AND FACTORS AFFECTING

315 Brefeld 1895

**USTILAGO PARADOXA** H. and P. Sydow and Butler Ann. Mycol.  
9: 144. 1911.

## CONTROL

1588 Kulkarni 1922

## LIFE HISTORY, PARASITISM AND FACTORS AFFECTING

1588 Kulkarni 1922

## MISCELLANEOUS

Comparison with *Ustilago panici-frumentacea* 2057 Mundkur  
1943

Effect on host 2057 Mundkur 1943

Importance in India 2057 Mundkur 1943

Revised description 2057 Mundkur 1943

## SPORE GERMINATION

2900 Sydow and Sydow 1911

1588 Kulkarni 1922

**USTILAGO PARAGUAYENSIS** Speg. Anal. Soc. Cient. Argentina  
17: 88. 1884.

## MISCELLANEOUS

Historical background and comparison with other smuts of *Cynodon* 1830 Magnus 1899**USTILAGO PARLATOREI** Fisch. v. Waldh. Hedwigia 15: 177.  
1876.*Ustilago stygia* Liro, Ann. Acad. Sci. Fenn. Ser. A, 17: 25. 1924.

## LIFE HISTORY, PARASITISM AND FACTORS AFFECTING

809 Fischer v. Waldheim 1877

2655 Schellenberg 1911

## MISCELLANEOUS

Symptoms and morphology 2655 Schellenberg 1911

Hosts and morphology 1720 Liro 1924

*Ustilago stygia* considered synonym 1213 Hirschhorn 1947

## SPORE GERMINATION AND FACTORS AFFECTING

809 Fischer v. Waldheim 1877

**USTILAGO PARODII** Hirschh. Darwinia 3: 404. 1939.**MISCELLANEOUS**

Symptoms and morphology 1191 Hirschhorn 1939

**SPORE GERMINATION AND FACTORS AFFECTING**

1191 Hirschhorn 1939

**USTILAGO PERENNANS** Rostr. Overs. K. Danske Vid. Selsk. Forh. 1890: 15*Uredo segetum* f. *decipiens* Wallr., Ann. Bot. 139. 1815. p.p.*Uredo segetum* Fries, Om Brand och Rost Poa Waster. (Lund) 14. 1821. p.p.*Erysibe vera holci avenacei* Wallr., Fl. Crypt. Germ. 4: 217. 1833.*Uredo segetum arrhenatherae* Opiz. Seznam Rostlin Kvet. Ceske (Pflanz. Fl. Boehmens) 150. 1852. (nom. nud.)*Ustilago carbo vulgaris* f. *avenaceae* Tul., Ann. Sci. Nat. Bot. III. 7: 80. 119. 1847.*Ustilago carbo* Kühn, Krank. d. Kulturgew. 52. 1858. p.p.*Uredo segetum* f. *avenae* Oud., Prody. Fl. Bot. f. II. 4: 179. 1866. p.p.*Cintractia avenae* Ellis and Tracy, Jour. Mycol. 6: 77. 1890.*Ustilago dura* Appel and Gassner, Mitt. Kais. Biol. Anst. f. Land. Forstw. 4: 14. 1907.*Ustilago arrhenatheri* Ferle, Korrespond. Nat. Ver. Riga 55: 1912.*Ustilago arrhenatheri* Schellenberg, Ber. Deut. Bot. Ges. 33: 316. 1915.*Ustilago decipiens* Liro, Ann. Acad. Sci. Fenn. A. 17: 95 and 445. 1924.**CONTROL**

973 Gram 1929

**CULTURE ON ARTIFICIAL MEDIA**

1501 Kniep 1926

286 Boss 1927

**CYTOLOGY**

2231 Paravicini 1917

286 Boss 1927

1315 Hüttig 1933

**HETEROTHALLISM AND SEX**

803 Fischer v. Waldheim 1869 (copulation between promycelial cells, called "bow-shaped sporidia")

2231 Paravicini 1917

1501 Kniep 1926

286 Boss 1927

1315 Hüttig 1933

159 Bauch 1934

**HYBRIDIZATION AND GENETICS**

1501 Kniep 1926 (sporidial fusions with other species)

159 Bauch 1934 (sporidial fusions with multipolar species)

797 Fischer and Holton 1941 (inheritance of sorus characters in *Ustilago avenae* x *U. perennans*)1251 Holton and Fischer 1941 (with *Ustilago avenae*)**LIFE HISTORY, PARASITISM AND FACTORS AFFECTING**

62 Appel and Gassner 1907

1720 Liro 1924



2546 Rosch 1926

286 Boss 1927

#### MISCELLANEOUS

History and morphology 1720 Liro 1924

Closely similar to but not identical with *Ustilago avenae* 2546 Rosch 1926

Incidence in seed samples of tall oat grass 677 Dorph-Petersen 1931

First report from Argentina 2236 Parodi 1938

Differs from *Ustilago avenae* only in being perennial 2236 Parodi 1938

Comparative morphology with *Ustilago avenae* with which consolidation is recommended 788 Fischer 1943

#### SPORE GERMINATION AND FACTORS AFFECTING

3056 Tulasne and Tulasne 1847

1556 Kühn 1858

803 Fischer v. Waldheim 1869

2559 Rostrup 1890

1158 Herzberg 1895

684 Duggar 1901

62 Appel and Gassner 1907 (as *Ustilago dura*)

2655 Schellenberg 1911

2231 Paravicini 1917

1720 Liro 1924

#### USTILAGO PINGUICULAE Rostr. Ustilagineae Daniae p. 144. 1890

*Ustilago antherarum* Wint., Hedwigia 17: 98. 1878.

*Ustilago violacea* Wint., Die Pilze. I. p. 98. 1881. p.p.

#### CULTURE ON ARTIFICIAL MEDIA

315 Brefeld 1895

#### LIFE HISTORY, PARASITISM AND FACTORS AFFECTING

2655 Schellenberg 1911

1689 Lind 1913

#### PHYSIOLOGIC SPECIALIZATION

1689 Lind 1913

#### SPORE GERMINATION AND FACTORS AFFECTING

315 Brefeld 1895

2655 Schellenberg 1911

#### USTILAGO PUSTULATA (DC.) Wint. Hedwigia 18: 109. 1880. (not *Ustilago pustulata* Tracy and Earle, 1895 on *Panicum* spp.)

*Uredo bistortarum pustulata* DC., Fl. Fr. 6: 76. 1815.

*Uredo bistortarum* Merat, Nouv. Fl. ed. I. 93. 1821.

*Caeoma bistortarum* Link, Sp. Pl. 2: 10. 1825.

*Ustilago utriculosa* Karsten, Enum. Fung. 222. 1866.

*Tilletia bullata* Fuck., Symb. Mycol. 40. 1869.

*Ustilago bistortarum* Körn., Hedwigia 16: 38. 1877.

- Ustilago bistortarum* Schröt., in Cohn, Beitr. Biol. Pflanz. 356. 1877.  
*Ustilago bullata* var. *glabra* Rostr., Bot. Tidsskr. 15: 229. 1886.  
*Ustilago bistortarum* var. *glabra* DeToni, Sacc. Syll. Fung. 7: 469. 1888.  
*Ustilago pustulata* Bubak in Vestergrén, Mic. rar. sel. 336. 1901.  
*Ustilago polygoni* Bref., Unters. Gesammt. Myk. 15: 5. 1912.

## LIFE HISTORY, PARASITISM AND FACTORS AFFECTING

- 2872 Strohmeier 1896  
 2654 Schellenberg 1907  
 2655 Schellenberg 1911  
 1720 Liro 1924

## MISCELLANEOUS

- Comparison with related forms 1720 Liro 1924  
 History and morphology 1720 Liro 1924

## SPORE GERMINATION AND FACTORS AFFECTING

- 716 Essmon 1893  
 315 Brefeld 1895  
 2655 Schellenberg 1911

## USTILAGO RABENHORSTIANA Kühn Hedwigia 15: 4. 1876.

- Caeoma syntherismae* Schwein., Trans. Am. Phil. Soc. II. 4: 290. 1834.  
*Ustilago setariae* Rabenh., in litt. et. sched. (non *Ustilago setariae* Rabenh. in Krypt. Exsicc. 902 and Univ. Itin. Krypt. 1866).  
*Ustilago destruens* var. *digitalis* Sacc., Nuovo Giorn. Bot. Ital. 8: 167. 1876.  
*Ustilago cesati* Fisch. v. Waldh., Aperçu 25. 1877. p.p.  
*Ustilago syntherismae* Auct. pp. Cooke in Grevillea 6: 138. 1878.  
*Ustilago digitariicola* Speg., Anal. Mus. Nac. Buenos Aires III. 1: 57. 1902.

## MISCELLANEOUS

- Infected *Digitaria sanguinale* immune from *Piricularia grisea*  
 1034 Halsted 1899  
 Vegetative vigor much prolonged in infected *Digitaria sanguinale*  
 as compared with uninfected plants 1034 Halsted 1899  
 Symptoms and morphology 2655 Schellenberg 1911  
 Longevity of spores; at least 8 years 779 Fischer 1936

## SPORE GERMINATION AND FACTORS AFFECTING

- 311 Brefeld 1883  
 2159 Norton 1896  
 1191 Hirschhorn 1939 (as *Ustilago digitariicola*)  
 1517 Kolk 1943

## USTILAGO READERI H. and P. Sydow (in letter 1905) McAlpine in Smuts of Australia 159. 1910.

- Ustilago agropyri* McAlpine, Agric. Gaz. New S. Wales 154. 1896.

## LIFE HISTORY, PARASITISM AND FACTORS AFFECTING

- 1763 McAlpine 1910

## MISCELLANEOUS

- Symptoms and morphology 1763 McAlpine 1910

## SPORE GERMINATION AND FACTORS AFFECTING

- 1763 McAlpine 1910  
 564 Cunningham 1924

**USTILAGO RECHINGERI** Sayul. Ann. Mycol. 35: 50-52. 1937.

MISCELLANEOUS

Morphology and comparison with other species on *Oryzopsis* 2630  
Savulescu 1937

**USTILAGO SACCHARI CILIARIS** Bref. Unters. Gesamt. Myk. 12: 109. 1895.

CULTURE ON ARTIFICIAL MEDIA

315 Brefeld 1895

MISCELLANEOUS

Morphology 315 Brefeld 1895

SPORE GERMINATION AND FACTORS AFFECTING

315 Brefeld 1895

**USTILAGO SCABIOSAE** (Sow.) Wint. Rabenh. in Krypt. Fl. 1: 99. 1881.

*Farinaria scabiosae* Sow., Engl. fung. 3: Tab. 396, Fig. 2. 1803.

*Uredo flosculorum* DC., Fl. France 6: 76. 1815.

*Caeoma flosculorum* Link, in Willd., Sp. Pl. 6: 21. 1825.

*Ustilago flosculorum* Fries. Syst. Mycol. 3: 518. 1832.

*Ustilago scabiosae* Schröt., Krypt. Schles. 3: 272. 1889.

CULTURE ON ARTIFICIAL MEDIA

311 Brefeld 1883

1501 Kniep 1926

2690, 2691 Schopfer and Blumer 1938 (found to be auxo-heterotrophic)

CYTOLOGY

1072 Harper 1898

2231 Paravicini 1917

HETEROTHALLISM AND SEX

311 Brefeld 1883

2231 Paravicini 1917

1501 Kniep 1926

HYBRIDIZATION AND GENETICS

1501 Kniep 1926 (sporidial fusions with other species)

LIFE HISTORY, PARASITISM AND FACTORS AFFECTING

801 Fischer v. Waldheim 1867

803 Fischer v. Waldheim 1869

3239 Winter 1879

2327 Plowright 1881

311 Brefeld 1883

2559 Rostrup 1890

1821 Magnus 1893

2655 Schellenberg 1911

1720 Liro 1924

MISCELLANEOUS

Effects on the host 1974 Molliard 1893

Effect of glucose asparagin concentration on copulation. Ability

to utilize different sources of carbon and nitrogen 237 Blumer  
and Schopfer 1940

SPORE GERMINATION AND FACTORS AFFECTING

801 Fischer v. Waldheim 1867

803 Fischer v. Waldheim 1869

3237 Winter 1876

2698 Schröter 1877

311 Brefeld 1883

2704 Schröter 1887

2333 Plowright 1889

2231 Paravicini 1917

**USTILAGO SCAURA** Liro (nom. nud.) Ann. Acad. Sci. Fenn. A.  
17: 73. 1924.

*Tilletia avenae* Ule, Ver. Bot. Prov. Brand. 25: 214. 1884.

LIFE HISTORY, PARASITISM AND FACTORS AFFECTING

1720 Liro 1924

MISCELLANEOUS

History and morphology 1720 Liro 1924

**USTILAGO SCITAMINEA** H. and P. Sydow Ann. Mycol. 22: 281.  
1924.

*Ustilago sacchari* Auct., pro Max., not Rabenh. nor Fischer v. Waldheim.

CONTROL

2744 Shepherd 1924

841 Francis 1938

1750 Luthra *et al.* 1940

748 Fawcett 1941

445 Chona 1943

1774 McMartin 1945

1883 Mathur 1945

CULTURE ON ARTIFICIAL MEDIA

749 Fawcett 1944

HOST RANGE

1774 McMartin 1945

LIFE HISTORY, PARASITISM AND FACTORS AFFECTING

1553 Krüger 1899

15 Ajrekar 1916

589 Dastur 1920

2744 Shepherd 1924

1749 Luthra *et al.* 1938

445 Chona 1943

1205 Hirschhorn 1943

749 Fawcett 1944

1774 McMartin 1945

1883 Mathur 1945

**MISCELLANEOUS**

Comparison with other smuts of sugar cane and related grasses  
470 Ciferri 1933

Serious on sugar cane in the Philippines 227 Bissinger 1934

Comparison with other smuts of sugar cane and related grasses  
257 Boedijn 1935

Comparison with other sugar cane smuts 2054 Mundkur 1939

New variety (*Sacchari-barberi*) proposed. Second new variety  
(*Sacchari-officinarum*) proposed 2054 Mundkur 1939

In five-month old crop in Bihar 2401 Rafay and Padmanabhan  
1940

Detection in Argentina 748 Fawcett 1941

First report from Argentina; comparison with other sugar cane  
smuts 1198 Hirschhorn 1941

Incidence in India 445 Chona 1943

Three species of insects constantly associated with sugar cane  
smut 1097 Hayward 1943

Geographic distribution in Argentina 1205 Hirschhorn 1943

Six groups by morphology of spores 1205 Hirschhorn 1943

Incidence in Natal, S. Africa 1774 McMartin 1945

Crisis in Argentine sugar industry 560, 561 Cross 1946, 1947

**SPORE GERMINATION AND FACTORS AFFECTING**

445 Chona 1943

749 Fawcett 1944

**VARIETAL RESISTANCE AND SUSCEPTIBILITY, AND INHERITANCE OF**

2744 Shepherd 1924

1646 Lee and Medalla 1931

556 Cross 1943

1205 Hirschhorn 1943

557, 558 Cross 1944

559 Cross 1945

**USTILAGO SCITAMINEA** Sydow var. **SACCARI-BARBERI** Mundkur Bull. Misc. Inf. Kew. 10: 529. 1939.

**MISCELLANEOUS**

Comparison with other sugar cane smuts and description of the  
variety 2054 Mundkur 1939

**USTILAGO SCITAMINEA** Sydow var. **SACCHARI-OFFICINORUM**  
Mundkur. Bull. Misc. Inf., Kew 10: 530. 1939.

**MISCELLANEOUS**

Description of variety and comparison with other sugar cane smuts  
2054 Mundkur 1939

**USTILAGO SCOLYMI** Roumeguere and Trabut Fungi sel. Exsicc.  
5129. 1890. Bull. Soc. Mycol. (France) 17: 257. 1901.

**SPORE GERMINATION AND FACTORS AFFECTING**

3279 Yen 1937

**USTILAGO SCORZONERAE** (Albert. and Schwein.) Schröt. Krypt. Schles. 3: 274. 1889.

*Uredo tragopogi* var. *scorzoneræ* Albert and Schwein., Consp. Fung. Lusatiæ 130. 1805.

*Uredo receptaculorum* DC., Encycl. Bot. 8: 228. 1803. p.p.

*Uredo receptaculi* Strauss, Ann. Wetter. Gesell. 2: 111. 1810. p.p.

*Uredo tragopogonis* Rohling, Sturm's Deutschland Fl. 3: 129. 1813. p.p.

*Uredo receptaculorum* f. *scorzoneræ humilis* DC., Fl. Fr. 6: 79. 1815.

*Erysibe receptaculorum* f. *scorzoneræ* Wallr., Fl. Crypt. Germ. 2: 214. 1833.

*Microbotryum receptaculorum* Lev., Ann. Sci. Nat. Bot. III. 8: 372, 376. 1847. p.p.

*Ustilago receptaculorum* Tul., IV. 2: pl. 12. fig. 34-40. 1854.

**CULTURE ON ARTIFICIAL MEDIA**

156 Bauch 1932

1528 Koudelka 1934 (from spore to spore in culture)

**CYTOLOGY**

2231 Paravicini 1917

**HETEROTHALLISM AND SEX**

2231 Paravicini 1917 (sporidial fusions)

156 Bauch 1932

**HOST RANGE**

2419 Rayss and Zwirn 1944 (*Scorzonera papposa*, new host, Palestine)

**LIFE HISTORY, PARASITISM AND FACTORS AFFECTING**

2704 Schröter 1887

315 Brefeld 1895

1148 Hennings 1903

2655 Schellenberg 1911

1720 Liro 1924

1528 Koudelka 1934

**MISCELLANEOUS**

Close relationship to *Ustilago tragopogi-pratensis* 1720 Liro 1924

Hosts and morphology 1720 Liro 1924

Effect of germinating spores on barley and rye. Reduced germination and dwarfed seedlings in barley plus profuse tillering. Caused "white ear" in oats (latent infection). Caused over three times as many tillers in rye, also very stunted 1528 Koudelka 1934

**PHYSIOLOGIC SPECIALIZATION**

1720 Liro 1924

**SPORE GERMINATION AND FACTORS AFFECTING**

3057 Tulasne 1854

315 Brefeld 1895

2231 Paravicini 1917

1720 Liro 1924

156 Bauch 1932

**USTILAGO SCUTULATA** Liro Ann. Acad. Sci. Fenn. Ser. A. 17: 14. 1924.LIFE HISTORY, PARASITISM AND FACTORS AFFECTING  
1720 Liro 1924

## MISCELLANEOUS

Hosts and morphology 1720 Liro 1924

## PHYSIOLOGIC SPECIALIZATION

1720 Liro 1924

## SPORE GERMINATION AND FACTORS AFFECTING

1720 Liro 1924

**USTILAGO SHIRAIANA** P. Henn. Bot. Jahrb. (Engler) 28: 260. 1900.*Cintractia bambusae* Miyabe and Hori, Bot. Mag. (Tokyo) 19: 199. 1905.

## CONTROL

2247 Patterson and Charles 1916

## CULTURE ON ARTIFICIAL MEDIA

1270 Hori 1905

## LIFE HISTORY, PARASITISM AND FACTORS AFFECTING

1270 Hori 1905

2247 Patterson and Charles 1916

## MISCELLANEOUS

Morphology and symptoms 1270 Hori 1905

Morphology and symptoms 2247 Patterson and Charles 1916

**USTILAGO SITANII** G. W. Fischer Mycologia 30: 391. 1938.

## SPORE GERMINATION AND FACTORS AFFECTING

780a Fischer 1938

**USTILAGO SLADENII** Pole-Evans Ann. Bolus Herb. 1: 115. 1915.

## CONTROL

278 Borghardt 1932

**USTILAGO SPEGAZZINII** Hirschh. Notas Museo La Plata, Bot. 4: 415-419. 1939.*Ustilago hypodytes* (Schlecht.) Fr., Syst. Mycol. 3: 518. 1832. p.p.*Ustilago stipae* Cif., Ann. Mycol. 29: 52. 1931.

and

**USTILAGO SPEGAZZINII** var. **AGRESTIS** (Syd.) G. W. Fisch. and Hirschh. Mycologia 37: 242. 1945.*Ustilago hypodytes* (Schlecht.) Fr., Syst. Mycol. 3: 518. 1832. p.p.*Ustilago agrestis* Syd., Ann. Mycol. 22: 278. 1924.*Ustilago bromi-erecti* Cif., Ann. Mycol. 29: 52. 1931.

*Note:* See also under *Ustilago hypodytes*. As shown by Fischer and Hirschhorn (795) several distinct smut fungi have been studied and observed for decades under the binomial *U. hypodytes*. In many instances it has been easy to relegate references to their proper specific category, but in the case of *U. spegazzinii* and the var. *agrestis* this was often impossible, particularly with regard to the older literature. Hence, the reader is referred also to the

literature classification under *U. hypodytes*. Many of the references given under that binomial are duplicated below also and many more undoubtedly pertain to *U. spegazzinii* or the variety *agrestis* rather than to *U. hypodytes* sensu Fischer and Hirschhorn. A complete bibliographic review of the stem smuts should include the references cited in both places.

#### CULTURE ON ARTIFICIAL MEDIA

280 Bornhövd 1936

#### CYTOLOGY

280 Bornhövd 1936

1211 Hirschhorn 1945

#### LIFE HISTORY, PARASITISM AND FACTORS AFFECTING

647 Dietel 1897 (as *Ustilago hypodytes* on *Agropyron repens*)

280 Bornhövd 1936 (on *Elymus arenarius*)

271 Bond 1940 (on *Elymus arenarius*)

789 Fischer 1945 (mode of infection and incubation period)

#### MISCELLANEOUS

Simultaneous with *Urocystis agropyri* on *Agropyron repens* 1564  
Kühn 1874

Prevalence on giant wild rye in western states (as *Ustilago hypodytes*) 993 Griffiths 1903

Effect on host (*Elymus arenarius*) 280 Bornhövd 1936

Technical description and Latin diagnosis 1189 Hirschhorn 1939

Effect on host (*Elymus arenarius*) 271 Bond 1940

Comparison with other stem smuts on *Stipa* and *Oryzopsis*; pathological histology; geographic distribution 790 Fischer 1945

Host range and geographic distribution 796 Fischer and Hirschhorn 1945

Position in "*Ustilago hypodytes*" complex; comparison with other *Ustilago* spp. causing stem smut 795 Fischer and Hirschhorn 1945

#### SPORE GERMINATION AND FACTORS AFFECTING

280 Bornhövd 1936

1189 Hirschhorn 1939

1517 Kolk 1943 (as *Ustilago minima*)

795, 796 Fischer and Hirschhorn 1945

**USTILAGO SPHAEROGENA** Burrill (Ell. and Ev., N. Ann. Fungi 1892; hyponym 1887); Sacc. Syll. 7: 468. 1888.

*Cintractia sphaerogena* Hume, Proc. Iowa Acad. Sci. 9: 233. 1902.

#### CULTURE ON ARTIFICIAL MEDIA

1871 Martin and Kernkamp 1941

#### MISCELLANEOUS

Comparative morphology with *Ustilago globigena* 1191 Hirschhorn 1939

**USTILAGO SPINIFICIS** Ludwig Zeitschr. Pflanz. 3: 138. 1893.

*Cintractia spinificis* McAlp., Smuts of Australia 174. 1910.



## CULTURE ON ARTIFICIAL MEDIA

315 Brefeld 1895

## LIFE HISTORY, PARASITISM AND FACTORS AFFECTING

315 Brefeld 1895

1763 McAlpine 1910

2193 Osborn 1922

## MISCELLANEOUS

Morphology 315 Brefeld 1895

Symptoms and morphology 1763 McAlpine 1910

Pathological morphology 2193 Osborn 1922

## SPORE GERMINATION AND FACTORS AFFECTING

315 Brefeld 1895

1763 McAlpine 1910

564 Cunningham 1924

**USTILAGO STRIIFORMIS** (Westend.) Niessl Hedwigia 15: 1. 1876.*Ustilago salveii* Berk. and Br., Ann. Nat. Hist. II. 5. 463. 1850.*Uredo striaeformis* Westend., Bull. Acad. Roy. Belg. 18: 406. 1852.*Tilletia de-Baryana* Fisch. v. Waldh. in Rabenh., Fungi Europ., 1498. 1866.*Tilletia milii* Fuck., Symb. Mycol. 1: 40. 1869.*Tilletia striaeformis* Oud., Bot. Ztg. 46: 441. 1878.*Tilletia alopecurivora* Ule., Verh. Bot. Ver. Prov. Brand. 25: 214. 1884.*Tilletia brizae* Ule., Verh. Bot. Ver. Prov. Brand. 25: 214. 1884.*Ustilago poarum* McAlp., Proc. Roy. Soc. Victoria n.s. 7: 220. 1894.*Ustilago washingtoniana* Ell. and Ev., Bull. Torrey Bot. Club 22: 57. 1895.*Ustilago festucarum* Liro, Ann. Acad. Sci. Fenn. A. 17: 77. 1924.*Ustilago scaura* Liro, Ann. Acad. Sci. Fenn. A. 17: 73. 1924.*Ustilago bromina* Syd., Ann. Mycol. 22: 277. 1924.*Ustilago agrostis-palustris* W. H. Davis, Cif. in Ann. Mycol. 29: 54. 1931.*Ustilago phlei-pratensis* W. H. Davis, Cif. in Ann. Mycol. 29: 55. 1931.*Ustilago phlaridis* Cif., Ann. Mycol. 29: 59. 1931.*Ustilago johnstonii* Cif., Nuovo Giorn. Bot. Ital. II. 40: 261. 1933.*Ustilago elymicola* Syd., Ann. Mycol. 32: 286. 1934.*Ustilago striaeformis* f. *hierochloae-odoratae* Sav. and Rayss, Ann. Inst. Rech.

Agron. Roumanie 7: 14. 1936.

*Ustilago poae* S. Ito, Mycol. Fl. Japan 2: 33. 1936.*Ustilago hierochloae-odoratae* Cif., Fl. Ital. Crypt. (Ustilaginales) 17: 344. 1938.*Ustilago lollicola* Cif., Fl. Ital. Crypt. (Ustilaginales) 17: 345. 1938.*Ustilago taenia* Cif., Fl. Ital. Crypt. (Ustilaginales) 17: 346. 1938.

## CONTROL

2211 Pammel 1890

2195 Osner 1916

2816 Stakman and Lambert 1923 (copper carbonate dust ineffective for timothy stripe smut)

1007 Güssow and Connors 1927

1544 Kreitlow 1947

## CULTURE ON ARTIFICIAL MEDIA

783 Fischer 1940

1538 Kreitlow 1943

- 1641, 1642, 1643 Leach *et al.* 1946  
2972 Thirumalachar and Dickson 1947

## CYTOLOGY

- 2195 Osner 1916  
2732 Seyfert 1927  
1642, 1643 Leach and Ryan 1946

## HETEROTHALLISM AND SEX

- 783 Fischer 1940  
1642, 1643 Leach and Ryan 1946  
792 Fischer 1947

## HYBRIDIZATION AND GENETICS

- 794 Fischer 1948 (with *Ustilago bullata*)

## MISCELLANEOUS

- First record, as *Uredo longissima* var. *holci* (exsiccati) 429 Cesati 1850  
Severe incidence in timothy in Iowa 2214 Pammel 1892  
Severe incidence in timothy in Iowa 2217 Pammel 1893  
Severity in timothy in California 993 Griffiths 1903  
Symptoms and morphology 2655 Schellenberg 1911  
Complete synonymy to date 2195 Osner 1916  
Host range 2195 Osner 1916  
Intraseminal infection 2195 Osner 1916  
Perennial nature of fungus in the host 2221 Pammel 1920  
As a composite species 1720 Liro 1924  
History and morphology 1720 Liro 1924  
Host range 1720 Liro 1924  
Clamp connections on the mycelium 2732 Seyfert 1927  
*Hystrix hystrix* (*H. patula*) new host 1395 Johnston 1931  
Host range 783 Fischer 1940  
Factors influencing after-ripening of spores 1542 Kreitlow 1944  
Prevalence and distribution on *Poa pratensis* in Pennsylvania pastures and methods of sampling pastures to determine 1547 Kreitlow and Meyers 1944  
Morphology and comparison with other stripe smuts 796 Fischer and Hirschhorn 1945  
Factors influencing after-ripening of spores 1543 Kreitlow 1945  
Comparative nomenclatorial validity with *Ustilago linearis* and *U. salvei* and the preference for *U. striiformis* 2847 Stevenson 1946  
Nomenclatorial background 2847 Stevenson 1946  
Importance on bluegrass 3194 Wellhausen *et al.* 1946
- LIFE HISTORY, PARASITISM AND FACTORS AFFECTING
- 803 Fischer v. Waldheim 1869  
2554 Rostrup 1885  
2872 Strohmeyer 1896  
479 Clinton 1900  
1689 Lind 1913

- 2195 Osner 1916  
 602 Davis 1923  
 603 Davis 1924  
 1720 Liro 1924 (as *Ustilago salveii*)  
 604 Davis 1926  
 1007 Güssow and Conners 1927  
 783 Fischer 1940  
 1539, 1541 Kreitlow 1943 (temperature as a factor)  
 1641 Leach *et al.* 1946  
 1544 Kreitlow 1947 (seed transmission)
- PHYSIOLOGIC SPECIALIZATION  
 1720 Liro 1924 (as *Ustilago salveii*)  
 605 Davis 1928  
 607, 608 Davis 1930  
 609 Davis 1935  
 783 Fischer 1940
- SPORE GERMINATION AND FACTORS AFFECTING  
 803 Fischer v. Waldheim 1869  
 2217 Pammel 1893  
 479 Clinton 1900  
 684 Duggar 1901  
 2224 Pammel *et al.* 1901  
 2195 Osner 1916  
 602 Davis 1923  
 603 Davis 1924  
 1720 Liro 1924  
 783 Fischer 1940  
 1539, 1541 Kreitlow 1943 (temperature and the after-ripening period)  
 1544 Kreitlow 1944 (after ripening)  
 796 Fischer and Hirschhorn 1945  
 1543 Kreitlow 1945 (after ripening)  
 1641 Leach *et al.* 1946  
 2972 Thirumalachar and Dickson 1947
- VARIETAL RESISTANCE AND SUSCEPTIBILITY, AND INHERITANCE OF  
 606 Davis 1929  
 783 Fischer 1940

**USTILAGO STYGIA** Liro Ann. Acad. Sci. Fenn. A. 17: 25. 1924.

- Ustilago kühneana* Bref., Unters. Gesammt. Myk. 5: 83. 1883. Taf. V. fig. 12-20. p.p.  
*Ustilago kühneana* Fisch. v. Waldh., Nuovo Giorn. Bot. Italy 9: 158. 1877. p.p.  
*Ustilago kühneana* Fisch. v. Waldh., Ann. Sci. Nat. Bot. VI. 4: 225. 1877. p.p.  
*Ustilago kühneana* Fisch. v. Waldh., Bull. Soc. Imp. Nat. Moscow. 52: 328. 1877. p.p.  
*Ustilago kühneana* Bubak, Houby Ceske, 2: 20. 1912; 2: 20. 1916. p.p.

## LIFE HISTORY, PARASITISM AND FACTORS AFFECTING

311 Brefeld 1883

1720 Liro 1924

## MISCELLANEOUS

History, hosts and morphology 1720 Liro 1924

Considered to be synonym of *Ustilago parlatorei* 1213 Hirschhorn 1947

## SPORE GERMINATION AND FACTORS AFFECTING

311 Brefeld 1883

**USTILAGO SUSSISIAE** P. Magnus Hedwigia 14: 17. 1875.

## LIFE HISTORY, PARASITISM AND FACTORS AFFECTING

1809 Magnus 1875

1148 Hennings 1903

2655 Schellenberg 1911

## SPORE GERMINATION AND FACTORS AFFECTING

1808 Magnus 1875

**USTILAGO THLASPEOS** (Beck) Lagerh. Bot. Notiser 1899. 172.*Tilletia thlaspeos* Beck, Ver. Zool.-Bot. Geo. (Wien) 35: 362. 1886.

## LIFE HISTORY, PARASITISM AND FACTORS AFFECTING

1422 Juel 1894

2655 Schellenberg 1911

## MISCELLANEOUS

Symptoms and morphology 2655 Schellenberg 1911

Hosts and morphology 1720 Liro 1924

## SPORE GERMINATION AND FACTORS AFFECTING

1422 Juel 1894

315 Brefeld 1895

**USTILAGO TOGATA** Liro Ann. Acad. Sci. Fenn. A. 17: 183. 1924.*Ustilago pustulata* Tracy and Earle, Bull. Torrey Bot. Club 22: 175. 1895.

## SPORE GERMINATION AND FACTORS AFFECTING

1517 Kolk 1943

**USTILAGO TRAGOPOGI-PRATENSIS** (Pers.) Roussel. Fl. Calvados ed. II. 47. 1806.*Uredo tragopogi-pratensis* Pers., Tenta. Dispos. Method. Fung., 57. 1797.*Uredo tragopogi-pratensis* Pers., Synop. Method. Fung. 225. 1801.*Uredo tragopogi-pratensis* Schumacher in Enum. Plant. Saell. 2: 234. 1803.*Uredo receptaculorum* DC., in Lamarck Encyclop. Method. Bot. 8: 228. 1808.*Uredo receptaculi* Strauss, Ann. Wetterausch. Ges. Nat. 2: 111. 1810.*Uredo receptaculorum* Link, Sp. Pl. 6: 17. 1825.*Ustilago receptaculorum* (*tragopogi*) Tul., Ann. Sci. Nat. IV. 2: 2. 1854.*Microbotryum receptaculorum* Lev., Ann. Sci. Nat. III. 8: 372. 1847.*Ustilago tragopogi-pratensis* Wint., Rabenh. Krypt. Fl. 1: 101. 1886.*Ustilago tragopogonis* Schröt., Krypt. Schles. 274. 1889.

## CULTURE ON ARTIFICIAL MEDIA

311 Brefeld 1883

750, 751 Federley 1904

1501 Kniep 1926

1528 Koudelka 1934 (from spore to spore in culture)

#### CYTOLOGY

579 Dangeard 1892

762 Ferry 1895

750, 751 Federley 1904

2414 Rawitscher 1912

2231 Paravicini 1917

#### HETEROTHALLISM AND SEX

803 Fischer v. Waldheim 1869 (fusion of sporidia)

311 Brefeld 1883 (fusion of sporidia)

579 Dangeard 1892

762 Ferry 1895

750, 751 Federley 1904

2414 Rawitscher 1912

2231 Paravicini 1917 (sporidial fusions)

1501 Kniep 1926

#### HYBRIDIZATION AND GENETICS

1501 Kniep 1926 (fusions with other species)

#### LIFE HISTORY, PARASITISM AND FACTORS AFFECTING

3056 Tulasne and Tulasne 1847

803 Fischer v. Waldheim 1869

311 Brefeld 1883

619 DeBary 1884

579 Dangeard 1892

762 Ferry 1895

2414 Rawitscher 1912

1720 Liro 1924

1528 Koudelka 1934

#### MISCELLANEOUS

Morphology and symptoms 311 Brefeld 1883

Morphology and symptoms 2655 Schellenberg 1911

Host range and morphology 1720 Liro 1924

Effect of germinating spores on barley seedlings, rye and oats:  
reduced germination and stunted seedlings in barley, plus profuse  
tillering; three times normal tillers in rye and often much stunt-  
ing; "white ear" (latent infection) in oats 1528 Koudelka  
1934

#### SPORE GERMINATION AND FACTORS AFFECTING

3057 Tulasne 1854

616 DeBary 1866

803 Fischer v. Waldheim 1869

311 Brefeld 1883

619 DeBary 1884

2329 Plowright 1889

579 Dangeard 1892

750, 751 Federley 1903

2414 Rawitscher 1912

2231 Paravicini 1917

**USTILAGO TRITICI** (Pers.) Rostr. Overs. Danske. Vid. Selsk. Forh. 15: Mar. 1890.*Uredo segetum* subsp. *tritici* Pers., Syn. Fung. 1: 224. 1801.*Uredo carbo* f. *tritici* DC., Fl. France 6: 76. 1815.*Ustilago segetum* Ditmar, Sturm's Deutschland Fl. 1: 67. 1816.*Caeoma segetum* Link, in Willdenow, Sp. Pl 6: 1. 1825. p.p.*Erysibe vera* f. *tritici* Wallr., Fl. Crypt. Germ. 2: 217. 1833.*Uredo carbo-tritici* Philippar, Me. Soc. Roy. Agric. Arts Seine-et-Oise 37: 197. 1837.*Ustilago carbo vulgaris triticea* Tul., Ann. Sci. Nat. Bot. III, 7: 80. 1847.*Ustilago segetum* var. *tritici* Jensen, Øm Korn. Brand. 61. 1881.*Ustilago segetum* var. *tritici* Jensen, Jour. Roy. Agric. Soc. England II, 24: 407. 1888.*Ustilago hordei* Bref., Nach. Klub. Landw. (Berlin) 1593, 1888. p.p.*Ustilago tritici* Jensen, in Kell. and Sw., Ann. Rept. Kans. Expt. Sta. 2: 262. June, 1890.*Ustilago tritici foliicola* P. Henn., Zeitschr. f. Pflanzenk. 4: 139. 1894.*Ustilagidium tritici* Herzberg, in Zopff, Beitr. Phys. Morph. Nied. Org. 139. 1895.*Ustilago vavilovi* de Jacz., Ann State Inst. Expt. Sta. III, 2-4: 106-109. 1925.**CONTROL**

374 Bryant 1783

95 Arthur 1890

1447 Kellerman and Swingle 1890

489 Cobb 1891

100 Arthur 1901

2541, 2542 Rommetin 1902

2879 Stuart 1902 (resistance of spores to formalin and hot water)

3025 Toporkow 1903

863 Frölich 1908

851 Freeman and Johnson 1909

2173 Oetken 1909

2300 Piardi 1909

67 Appel and Riehm 1910

2650 Schander 1910

68, 69 Appel and Riehm 1911

2862 Störmer 1911

71 Appel and Riehm 1912

2651 Schander 1912

2864 Störmer 1912

72 Appel and Riehm 1914

2386 Quanjer and Batjes 1915

1901 Melchers 1916

1924 Mercer 1916

2314 Pipal 1921

985 Gregory 1922

1186 Hiltner and Lang 1922

- 114 Ausborn 1923  
2556 Schitikova 1923  
2915 Tapke 1923  
1009 Guyot 1924  
2096 Neill 1924  
2666 Schitikova 1924  
2916 Tapke 1924  
987 Gregory 1925  
1010 Guyot 1925  
2097 Neill 1925  
2526 Rodenhiser and Stakman 1925  
776 Fischer and Belmonte 1926  
325 Brentzel 1926  
512 Conners 1926  
2291 Petri 1926  
2540 Rohweder 1926  
2913 Tamm and Husfeld 1926 (use of electric hot water seed-steeper)  
963 Gorshtosharuk 1927  
1007 Güssow and Conners 1927  
1648 Leidner 1927  
1308 Hurst 1928  
973 Gram 1929  
1854 Marchionatto 1929 (hot air treatment)  
2008 Morris and Kurtz 1929  
2918 Tapke 1929  
9 Abramoff 1930  
11 Adam and Prescott 1931  
2276 Petit 1931 (through production of seed wheat in low humidity smut-free areas)  
2919 Tapke 1931  
916 Gassner 1933  
921 Gassner and Kirchoff 1933  
2279 Petit 1933  
922 Gassner and Kirchoff 1934  
1747, 1748 Luthra and Sattar 1934  
2029 Mourashkinsky 1934  
2178 Oort 1934 (new hot-water method)  
1058 Hanna and Popp 1935  
3311 Zalessky 1935 (anaerobic treatment)  
924 Gassner and Kirchoff 1936  
1594 Kuprianoff and Proyda 1936  
1965 Mitra and Taslim 1936 (solar energy and sun-heated water)  
2179 Oort 1936  
2284 Petit 1936  
3092 Vanderwalle and Larose 1936  
3135 Visser 1936

2285, 2286, 2287 Petit 1937

3024 Toomre 1938

3136 Vladimirskaia 1938

1005 Guillochon 1939

1408 Jones 1939

2288 Petit 1939

434 Chester 1940 (portable hot water seed treater)

273 Bonne 1941 (use of hot water method under anaerobic conditions)

1746 Luthra 1941 (use of solar heat)

1627 Larose 1946

2997 Timonin 1946 (efficacy of the antibiotic, patulin)

2705 Schuk 1947

#### CULTURE ON ARTIFICIAL MEDIA

68 Appel and Riehm 1911

2621 Sartoris 1924

1501 Kniep 1926

2512 Rodenhiser 1926

2513 Rodenhiser 1928

1313 Hüttig 1931

450 Christensen 1935

1620 Lange de la Camp 1936

1690, 1691 Schopfer and Blumer 1938 (auxo-autotrophic)

2762 Skvortzoff 1938

1433 Keil 1940

#### CYTOLOGY

1447 Kellerman and Swingle 1890

1751 Lutman 1910

2231 Paravicini 1917

2416 Rawitscher 1922

2587 Ruttle 1934

1620 Lange de la Camp 1936

2989 Thren 1941 (cytology of the dicaryophase)

#### HETEROTHALLISM AND SEX

1501 Kniep 1926

1313 Hüttig 1931

450 Christensen 1935

1620 Lange-de la Camp 1936

1622 Lange-de la Camp 1940

2989 Thren 1941

#### HOST RANGE

1295 Humphrey and Tapke 1925 (incidence on rye and artificial infection of rye)

780a Fischer 1938 (natural occurrence on *Agropyron sibiricum*)

#### HYBRIDIZATION

1501 Kniep 1926 (incomplete hybrid with *Ustilago hordei* and *U. bullata*)



2989 Thren 1941 (copulation with *Ustilago nuda*)

LIFE HISTORY, PARASITISM AND FACTORS AFFECTING

374 Bryant 1783

1022 Hallier 1867

803 Fischer v. Waldheim 1869

1447 Kellerman and Swingle 1890

1158 Herzberg 1895

1792 Maddox 1895 (probably first demonstration of intraseminal infection)

1794 Maddox 1897 (early demonstration of intraseminal infection)

989 Grenfell 1900

318 Brefeld 1903 (early demonstration of intraseminal infection)

1120 Hecke 1904 (early demonstration of intraseminal infection)

322 Brefeld and Falk 1905

1121 Hecke 1905

1122 Hecke 1906

2868 Strampelli 1906

62 Appel and Gassner 1907

319 Brefeld 1907

1271 Hori 1907 (early demonstration of intraseminal infection)

851 Freeman and Johnson 1909

2968 Theomin 1909

1614 Lang 1910

1763 McAlpine 1910

68 Appel and Riehm 1911

71 Appel and Riehm 1912

321 Brefeld 1912

1615 Lang 1913

72 Appel and Riehm 1914

2488 Riehm 1914

1616 Lang 1917

865 Fromme 1920

1720 Liro 1924

1007 Güssow and Conners 1927

1529 Koursanow 1926 (influence on physiology of the host)

2308 Piekenbrock 1927

1530 Koursanow 1928 (influence on physiology of the host)

2948 Taylor 1928

2917, 2918 Tapke 1929

2276 Petit 1931

2919 Tapke 1931

2537 Roemer and Kamlah 1932

2587 Ruttle 1934

2747 Sidorin *et al.* 1935

3124 Viennot-Bourgin 1935

- 1620 Lange-de la Camp 1936  
 1628 Larose and Vanderwalle 1937  
 3126 Viennot-Bourgin 1937  
 2180 Oort 1939  
 1622 Lange-de la Camp 1940  
 2181 Oort 1940  
 2182 Oort 1940  
 3089 Vanderwalle 1940  
 273 Bonne 1941  
 2989 Thren 1941  
 3090 Vanderwalle 1942  
 214 Bever 1943  
 3091 Vanderwalle 1945

## MISCELLANEOUS

- Early history 1447 Kellerman and Swingle 1890  
 Longevity (barely a year) 318 Brefeld 1903  
 Symptoms and morphology 1763 McAlpine 1910  
 Longevity (barely a year) 2231 Paravicini 1917  
 Combined control with *Tilletia caries* 2040 Müller *et al.* 1923  
 Hosts and history 1720 Liro 1924  
 Completion of life cycle on artificial media 2621 Sartoris 1924  
 Spontaneous occurrence of buff type 410 Campagna 1925  
 Severe occurrence in Indiana 987 Gregory 1925  
 Seed grading no means of control 2098 Neill 1925  
 Varietal differences in expression of smut sori 2994 Tiemann 1925  
 Incidence in North Dakota 325 Brentzel 1926  
 Chlamydospores developed in culture 2512 Rodenhiser 1926  
 Morphologically indistinct from *Ustilago nuda*, therefore synonymous 2512 Rodenhiser 1926  
 Incidence on leaf sheaths 899 Garbowski 1927  
 Rare in Ireland 2079 Murphy 1927  
 Inoculation device 2308 Piekenbrock 1927  
 Distribution of mycelium in host and anatomical changes caused 1496 Klushnikova 1928  
 Not a distinct species from *Ustilago nuda* 2513 Rodenhiser 1928  
 Production of chlamydospores in culture 2513 Rodenhiser 1928  
 Three to four times as many smutted heads from small seeds as from large 2948 Taylor 1928  
 Inoculation method 2871 Stringfield 1929  
 Factors involved in resistance 2917 Tapke 1929  
 Seed from fields with loose smut can be planted with safety provided hot water treatment is given 1931 Meyer-Bahlburg 1930  
 Factors for sex segregated independently of cultural characters 1313 Hüttig 1931  
 Type of germination markedly influenced by temperature 1313 Hüttig 1931

- Competition with *Tilletia caries* on same host plant 2073 Munerati 1931
- Influence of humidity on floral infections 2919 Tapke 1931
- Chemical composition of the spores 412 Campanile 1932
- Virulence of the fungus influenced by selective action of the host 2537 Roemer and Kamlah 1932
- A simple, easy inoculation method 1944 Milan 1933
- Flotation method of separating out infected grains 3312 Zalessky and Wasjuta 1933
- Fresh spores germinate less readily than those kept at room temperature for several days 704 Enomoto 1934
- Stimulatory effects of ether 704 Enomoto 1934
- Known to exist in California since 1832 1139 Hendry and Hausen 1934
- Correlation of lodicule size with smut reaction 2947 Tavcar 1934
- Influence on development and habit of host 386 Buchheim 1935
- Freezing of infected seeds has no effect on development of the pathogen or host 387 Buchheim 1935
- Method of obtaining haploid cultures equivalent to monosporidial cultures 450 Christensen 1935
- Wheat plants containing mycelium more sensitive to light but less sensitive to gravity 1979 Montemartini 1935
- Effect of late sowing on development of smut 2747 Sidorin *et al.* 1935
- Sporulation in leaf tissues 3124 Viennot-Bourgin 1935
- Pathological anatomy of leaves and flower parts 3124 Viennot-Bourgin 1935
- Relation of water absorption by seed and embryo efficacy of hot water treatment 924 Gassner and Kirchoff 1936
- Differential staining of living and dead spores with neutral red 1335 Jablokova 1936
- Simultaneous occurrence with *Tilletia caries* 1946 Milan 1936
- Ustilago tritici* suppresses development of *Tilletia caries* when same plant infected by both 1946 Milan 1936
- Portable evacuation equipment and method for field inoculations 1981, 1982 Moore 1936
- Extent of surface contamination of seed not necessarily indication of actual amount of internal infection 2284 Petit 1936
- Method of isolating from infected wheat seeds 382 Bubentzoff 1937
- Foliar symptoms 999 Grodsinsky 1937
- Detection of loose smut before heading 2592 Sabourova 1937
- Detection of hyphae in seed wheat 2761 Skvortzoff 1937
- Pathological changes induced in the host 3126 Viennot-Bourgin 1937
- Case of respiratory allergy 3248 Wittich and Stakman 1937
- Adverse effects of vernalization 3336 Zuhr 1937

- Toxicity of spores to mice 620 Debre and Nevot 1938  
 Competition with *Tilletia caries* results in marked suppression of the latter 1046 Hanna 1938  
 Simultaneous occurrence with *Tilletia caries* and ergot in same heads of wheat 1046 Hanna 1938  
 Growth factors 2690, 2691 Schopfer and Blumer 1938  
 Cardinal temperatures 2762 Skvortzoff 1938  
 Relation of smut to tillering 1948 Milan 1939  
 Inoculation method (a modification of Moore's [1981] method) 2180 Oort 1939  
 Anatomical and morphological changes induced 2593 Sabourova 1939  
 As cause of hay fever and asthma 3246 Wittich 1939  
 Differential response of mycelium to ultra-violet irradiation 3270 Yablokova 1939  
 Aerial dissemination 2182 Oort 1940  
 Physiological modifications induced in host 2594 Sabourova 1940  
 Geographic distribution 273 Bonne 1941  
 A distinct species from *Ustilago nuda* 2989 Thren 1941  
 Morphologically indistinct from and therefore synonymous with *Ustilago nuda* 788 Fischer 1943  
 Extreme hypersensitivity of resistant varieties 2183 Oort 1944  
 Detection of live mycelium by fluorescent microscopy 3271 Yablokova 1944  
 Rapid floral inoculation method 3091 Vanderwalle 1945  
 Relation of percentage infection to yield and reduction 509 Compton and Caldwell 1946  
 Two methods for detecting presence of mycelium in embryos of wheat seed 2755 Simmonds 1946  
 Fungicidal and fungistatic activity of antibiotic, patulin 2997 Timonin 1946  
 High pressure jet inoculation method 1989 Moore and Munnecke 1949

#### PHYSIOLOGIC SPECIALIZATION

- 2512 Rodenhiser 1926  
 2308 Piekenbrock 1927  
 2513 Rodenhiser 1928  
 2917 Tapke 1929  
 991 Grevel 1930  
 1055 Hanna and Popp 1932  
 2397 Radulescu 1935  
 1983 Moore 1936  
 1045 Hanna 1937  
 405 Caldwell and Compton 1940  
 2988 Thren 1941  
 1985 Moore 1942  
 214 Bever 1943

216 Bever 1947

2184 Oort 1947

1986 Moore 1948

#### SPORE GERMINATION AND FACTORS AFFECTING

803 Fischer v. Waldheim 1869

313 Brefeld 1888

1447 Kellerman and Swingle 1890

2559 Rostrup 1890

489 Cobb 1891

3269 Wutrich 1892

1931 Miczynski 1893

315 Brefeld 1895

1158 Herzberg 1895

55 Appel 1909

1614 Lang 1910 (promycelium emerges through germ pore)

1763 McAlpine 1910

2230 Paravicini 1916

2231 Paravicini 1917 (promycelium emerges through crack in spore wall)

2291 Petri 1926 (effect of pH and heat on)

2308 Piekenbrock 1927

1313 Hüttig 1931 (influence of temperature)

1433 Keil 1940

#### VARIETAL RESISTANCE AND SUSCEPTIBILITY, AND INHERITANCE OF

95 Arthur 1890

318 Brefeld 1903

62 Appel and Gassner 1907

851 Freeman and Johnson 1909

1141 Henning 1909

533 Coons and Spragg 1918

866 Fromme 1921

2728 Sessous 1925

867 Fromme 1926

2994 Tiemann 1926

2917 Tapke 1929

2138 Nieves 1930 (same varieties resistant also to *Tilletia caries* and *T. foetida*)

2277 Petit 1931

90 Artemoff 1933

1466 Kilduff 1933

2075 Munerati 1933

3000 Tingey and Tolman 1934

2579 Rudorf and Rosenstiel 1934

834 Fomin 1935

2397 Radulescu 1935

1628 Larose and Vanderwalle 1937

1949 Milan 1939

- 405 Caldwell and Compton 1940  
 2181 Oort 1940  
 2064 Mundkur and Pal 1941  
 3226 Wingard 1941  
 3227 Wingard and Fromme 1941  
 3090 Vanderwalle 1942  
 108 Atkins 1943  
 2183 Oort 1944  
 2206 Pal and Mundkur 1945  
 109 Atkins *et al.* 1947  
 406 Caldwell and Compton 1947  
 2184 Oort 1947  
 3284 Yin 1948

**USTILAGO ULEI** P. Henn. Hedwigia 34: 88. 1895.

LIFE HISTORY, PARASITISM AND FACTORS AFFECTING  
 315 Brefeld 1895

MISCELLANEOUS

Morphology 315 Brefeld 1895

SPORE GERMINATION AND FACTORS AFFECTING  
 315 Brefeld 1895

**USTILAGO UNDERWOODII** Zundel Ustilaginales of the World

*Ustilago hypodytes* (Schlecht.) Fries, in North Am. Fl. 7: 978. 1939. p.p.

SPORE GERMINATION AND FACTORS AFFECTING  
 1517 Kolk 1943

**USTILAGO UTRICULOSA** (Nees) Unger Einfl. Bod. 211. 1836.

*Caeoma utriculosum* Nees, Syst. Pilze 1: 14. 1817.

*Uredo utriculosa* Duby, in DC., Bot. Gall. 2: 901. 1830. p.p.

*Ustilago utriculosum* Fries, Syst. Mycol. 3: 519. 1832.

*Erysibe utriculosa* Wallr., Fl. Crypt. Germ. 2: 216. 1833. p.p.

*Ustilago utriculosum* Fries, Summa Veg. Scand. 516. 1846. (Name only.)

*Ustilago utriculosa* Tul., Ann. Sci. Nat. Bot. III, 7: 102. 1847.

*Sporisorum muricatum* Cesati, Klotz. Rab. Herb. Viv. Myc. Fungi, 1693. 1852.

*Ustilago reticulata* Liro, Ann. Acad. Sci. Fenn. A, 17: 20. 1924.

*Ustilago muricata* Liro, Ann. Acad. Sci. Fenn. A, 17: 238. 1924.

*Ustilago cordai* Liro, Ann. Acad. Sci. Fenn. A, 17: 12. 1924.

*Ustilago controversa* Cif., Ann. Mycol. 29: 41. 1931.

*Ustilago persicariae* Cif., Ann. Mycol. 29: 41. 1931.

CULTURE ON ARTIFICIAL MEDIA

1501 Kniep 1926

HETEROTHALLISM AND SEX

2902 Sydow and Butler 1907 (fusion of sporidia)

1501 Kniep 1926

HYBRIDIZATION AND GENETICS

1501 Kniep 1926 (sporidial fusions with other species)

LIFE HISTORY, PARASITISM AND FACTORS AFFECTING

3056 Tulasne and Tulasne 1847

1720 Liro 1924 (as *Ustilago reticulata* and *U. cordai*)

## MISCELLANEOUS

Morphology 315 Brefeld 1895

Morphology and effect on host 2655 Schellenberg 1911

History and morphology 1720 Liro 1924

Reasons for untenability of binomial *Ustilago utriculosa* 1720 Liro 1924

Wheat contaminated with spores and docked as contaminated with *Tilletia caries* or *T. foetida* 5 Aamodt and Malloch 1932

## PHYSIOLOGIC SPECIALIZATION

1720 Liro 1924 (as *Ustilago reticulata*, *U. muricata*, and *U. cordai*)

## SPORE GERMINATION AND FACTORS AFFECTING

3253 Wolff 1874

2704 Schröter 1887

2329 Plowright 1889

315 Brefeld 1895

2902 Sydow *et al.* 1907

1763 McAlpine 1910

1720 Liro 1924 (as *Ustilago cordai*)

796 Fischer and Hirschhorn 1945

**USTILAGO VAILLANTII** Tul. Ann. Sci. Nat. III, 7: 90. 1847.

*Ustilago vaillantii* Schröt., Hedwigia 15: 109. 1876.

*Ustilago scillae* Cif., Ann. Mycol. 29: 24. 1931.

## CULTURE ON ARTIFICIAL MEDIA

315 Brefeld 1895

## CYTOLOGY

1880 Massee 1914

2231 Paravicini 1917

## HETEROTHALLISM AND SEX

2231 Paravicini 1917 (copulation between sporidia)

## LIFE HISTORY, PARASITISM AND FACTORS AFFECTING

803 Fischer v. Waldheim 1869

538 Cornu 1878

942 Giard 1889

1801 Magnin 1890

1804 Magnin 1891

1803 Magnin 1891

1805 Magnin 1892

315 Brefeld 1895

2655 Schellenberg 1911

591 Davie and Wilson 1914

1880 Massee 1914

1842 Maire 1917

## MISCELLANEOUS

Morphology 315 Brefeld 1895

Host range and history 1720 Liro 1924

## SPORE GERMINATION AND FACTORS AFFECTING

- 2698 Schröter 1877  
 619 DeBary 1884  
 2003 Moroni 1886  
 1877 Masee 1893  
 315 Brefeld 1895  
 2655 Schellenberg 1911  
 2231 Paravicini 1917

**USTILAGO VINOSA** (Berk.) Tul. Ann. Sci. Nat. Bot. III, 7: 96. 1847.

*Uredo vinosa* Berk., in litt. Tul. Ann. Sci. Nat. Bot. III, 7: 96. 1847.

## CULTURE ON ARTIFICIAL MEDIA

- 1501 Kniep 1926

## HETEROTHALLISM AND SEX

- 315 Brefeld 1895 (sporidial fusions and formation of infection hyphae)  
 1501 Kniep 1926

## HYBRIDIZATION AND GENETICS

- 1501 Kniep 1926 (hybridization with other species)

## LIFE HISTORY, PARASITISM AND FACTORS AFFECTING

- 2563 Rostrup 1891  
 1720 Liro 1924

## MISCELLANEOUS

- Pathological histology 579 Dangeard 1892  
 Morphology 315 Brefeld 1895  
 Morphology and symptoms 2655 Schellenberg 1911

## SPORE GERMINATION AND FACTORS AFFECTING

- 315 Brefeld 1895  
 1720 Liro 1924

**USTILAGO VIOLACEAE** (Pers.) Rouss. Fl. Calvados ed. II, 47. 1806.

- Uredo violaceae* Pers., Teut. Disp. Fung. 57. 1797.  
*Uredo violaceae* Pers., Syn. Meth. Fung. 225. 1801.  
*Paranaria stellariae* Sowerby, Engl. Fungi. tab. 396. fig. 1. 1803.  
*Uredo antherarum* DC., Fl. France 6: 79. 1815.  
*Caeoma violaceum* Nees, Syst. Pilze 1: 14. 1817.  
*Caeoma violacea* Martius, Fl. Crypt. Erl. 315. 1817.  
*Caeoma antherarum* Schlecht., Fl. Ber. 2: 130. 1824.  
*Ustilago antherarum* Fries, Syst. Mycol. 3: 518. 1832.  
*Erysibe antherarum* Wallr., Fl. Crypt. Germ. 2: 217. 1833.  
*Microbotryum antherarum* Lev., Ann. Sci. Nat. Bot. III. 8: 372. 1847.  
*Ustilago violacea* Fuck., Jahrb. Nassau. Ver. Naturk. 15: 21. 1861.  
*Ustilago antherarum* Liro., Ann. Acad. Sci. Fenn. A, 17: 32. 1924.  
*Ustilago lychnidis-dioicae* Liro, Ann. Acad. Sci. Fenn. A, 17: 33. 1924.  
*Ustilago dianthorum* Liro, Ann. Acad. Sci. Fenn. A, 17: 35. 1924.  
*Ustilago superba* Liro, Ann. Acad. Sci. Fenn. A, 17: 37. 1924.  
*Ustilago coronariae* Liro, Ann. Acad. Sci. Fenn. A, 17: 38. 1924.  
*Ustilago stellaria* Liro, Ann. Acad. Sci. Fenn. A, 17: 39. 1924.



*Ustilago silenes-nutantis* Liro, Ann. Acad. Sci. Fenn. A, 17: 43. 1924.

*Ustilago silenes-inflatae* Liro, Ann. Acad. Sci. Fenn. A, 17: 44. 1924.

## CONTROL

3211 White 1936

## CULTURE ON ARTIFICIAL MEDIA

311 Brefeld 1883

1498 Kniep 1919

3329 Zillig 1921

148 Bauch 1922

1501 Kniep 1926

961 Goldschmidt 1928

235 Blumer 1937

2688 Schopfer 1937 (optimum strength of aneurin)

2690, 2691 Schopfer and Blumer 1938 (growth factors)

## CYTOLOGY

579 Dangeard 1892

762 Ferry 1895

1072 Harper 1898

3203 Werth and Ludwigs 1912

2231 Paravicini 1917

3177 Wang 1932

## HETEROTHALLISM AND SEX

803 Fischer v. Waldheim 1869 (fusion of sporidia)

311 Brefeld 1883 (fusion of sporidia)

579 Dangeard 1892

762 Ferry 1895

1072 Harper 1898 (fusion of sporidia)

2231 Paravicini 1917 (fusion of sporidia)

1498 Kniep 1919

3329 Zillig 1921

148 Bauch 1922

150 Bauch 1925

1501 Kniep 1926

152 Bauch 1927

## HYBRIDIZATION AND GENETICS

3329 Zillig 1921 (sporidial fusion between physiologic races)

1501 Kniep 1926 (sporidial fusions with other species)

961 Goldschmidt 1928 (interracial)

## LIFE HISTORY, PARASITISM AND FACTORS AFFECTING

3056 Tulasne and Tulasne 1847

803 Fischer v. Waldheim 1869

2698 Schröter 1877

2327 Plowright 1881

311 Brefeld 1883

939 Giard 1888

1797, 1798, 1799, 1800 Mangin 1888-1889

940 Giard 1888

- 942 Giard 1889  
 1807 Mangin and Giard 1889  
 3153 Vuillemin 1891  
 579 Dangeard 1892  
 1789 MacMillan 1892  
 1805 Mangin 1892  
 1806 Mangin 1893  
 1794 Molliard 1893  
 762 Ferry 1895  
 2333 Plowright 1899  
 842 Franciscis 1901  
 943 Giard 1902  
 117 Baar 1903  
 185 Behrens 1904  
 322 Brefeld and Falk 1905  
 1124 Hecke 1907 (vegetative infection)  
 3198 Werth 1909  
 3199 Werth 1910  
 3200 Werth 1911  
 3201 Werth 1912  
 3203 Werth and Ludwigs 1912  
 1689 Lind 1913  
 1498 Kniep 1919  
 3329 Zillig 1921  
 1720 Liro 1924  
 1128 Hecke 1926  
 709 Erlenmeyer and Geiger-Heuber 1935  
 3211 White 1936  
 235 Blumer 1937  
 236 Blumer 1941  
 1887 Maurizio 1941  
 127 Baker 1947

## MISCELLANEOUS

Causing a "new variety" of *Lychnis diurna* "with black eyes"

671 Dod 1889

Symptoms and morphology 3256 Wolley 1889

Pathological histology 117 Baar 1903

Symptoms and morphology 2655 Schellenberg 1911

Infected hosts sometimes described as "new forms" 1689 Lind 1913

Host range and geographic distribution 3328 Zillig 1920

Hosts and morphology 1720 Liro 1924

Infection on leaf axil buds 1128 Hecke 1926

Strain differences and secondary sexual characters 152 Bauch 1927

Severe incidence on carnations in London 3211 White 1936

Optimum concentration of aneurin for culture on synthetic medium  
2688 Schopfer 1937

Growth factors 2690, 2691 Schopfer and Blumer 1938

Reported for first time in Quebec 2338 Pomerleau and Brunel  
1939

First record on cultivated *Dianthus* in Norway 1017 Hagen 1948

#### PHYSIOLOGIC SPECIALIZATION

1498 Kniep 1919

3329 Zillig 1921

1720 Liro 1924 (as *Ustilago lychnidis-dioicae*)

152 Bauch 1927

961 Goldschmidt 1928 (inheritance of specialization)

127 Baker 1947

#### SPORE GERMINATION AND FACTORS AFFECTING

3056 Tulasne and Tulasne 1847

614 DeBary 1853

803 Fischer v. Waldheim 1869

2698 Schröter 1877

311 Brefeld 1883

2329 Plowright 1889

579 Dangeard 1892

716 Essmon 1893

762 Ferry 1895

1072 Harper 1898

2655 Schellenberg 1911

321 Brefeld 1912

2231 Paravicini 1917

1498 Kniep 1919

3329 Zillig 1921

**USTILAGO VUIJCKII** Oudemans and Beijerinck. Oud. Versl. Akad.  
Amsterdam IV, 3: 55. 1895.

*Cintractia vuijckii* Cif., Ann. Mycol. 29: 72. 1931.

#### CYTOLOGY

1720 Liro 1924

2732 Seyfert 1927

#### LIFE HISTORY, PARASITISM AND FACTORS AFFECTING

2195 Oudemans 1895

389 Bucholtz and Ekman 1920

1720 Liro 1924

2732 Seyfert 1927

#### MISCELLANEOUS

Hosts and morphology 1720 Liro 1924

Phylogenetic affinities to Peronosporaceae 1720 Liro 1924

#### PHYSIOLOGIC SPECIALIZATION

1720 Liro 1924

## SPORE GERMINATION AND FACTORS AFFECTING

315 Brefeld 1895

2199 Oudemans 1895

1720 Liro 1924

2732 Seyfert 1927

**USTILAGO WILLIAMSII** (Griff.) Lavrov. Trav. Inst. Sci. Biol. Univ. Tomsk 2: 22. 1936.*Ustilago hypodytes* (Schlecht.) Fr. Syst. Mycol. 3: 518. 1829. In part.*Sorosporium williamsii* Griff., Bull. Torr. Bot. Club 29: 290-301. 1902.*Ustilago appendiculata* Speg., Ann. Mus. Nac. Buenos Aires III. 12: 288. 1909.

## CYTOLOGY

1211 Hirschhorn 1945

## MISCELLANEOUS

Morphology (as *Ustilago appendiculata*) 1191 Hirschhorn 1939Comparison with other stem smuts of *Stipa* and *Oryzopsis*; pathological histology; geographic distribution 790 Fischer 1945Position in "*Ustilago hypodytes*" complex; comparison with other *Ustilago* spp. causing stem smut; geographic distribution 795 Fischer and Hirschhorn 1945

Morphology and symptoms 796 Fischer and Hirschhorn 1945

## SPORE GERMINATION

1635 Lavrov 1936

1191 Hirschhorn 1939 (as *Ustilago appendiculata*)1517 Kolk 1943 (as *Ustilago hypodytes*)

795 Fischer and Hirschhorn 1945

796 Fischer and Hirschhorn 1945

**USTILAGINALES GENERAL**

## CONTROL

263 Bolley 1897 (introduction of formaldehyde as fungicide for smut control in cereals)

2796-2798 Staes 1898 (warning against use of mill dusts and castings as fertilizer)

3047, 3048 Tubeuf 1901 (cereal smuts)

3049-3051 Tubeuf 1902 (cereal smuts)

1763 McAlpine 1910

3320 Wilcox 1912 (cereal smuts)

3101 Vaughan and Johnson 1916 (grain smuts in general)

1925 Merchan 1919 (use of electric current through salt solution)

1926 Mercier 1919 (by electrification)

1785 Mackie and Briggs 1920

1115 Heald and Zundel 1921 (cereal smuts)

163 Baudys 1922 (wheat and barley smuts)

1784 Mackie 1925 (seed treated with fungicidal dusts avoided by insects and mice)

- 1788 Mackie and Briggs 1926 (effect of copper carbonate-treated wheat upon mice)  
3003, 3004 Tisdale 1926 (cereal smuts)  
953 Gitmann 1927 (formalin vapor and cereal smuts)  
2346 Potapov 1927 (Siberian smuts)  
2749 Siegwardt 1927 (wheat treated with tillantin dust and subsequently washed and dried is safe for consumption by pigs and fowl)  
3019 Tisdale and Tapke 1927 (wheat and rye)  
1282 Howitt and Stone 1929 (grain smuts)  
2678 Schmidt 1932 (detection of mercury in treated cereal seed)  
1059 Hanna and Popp 1935 (cereal smuts)  
3150 Vong-May and Chan-Tsi 1935 (cereal smuts)  
1309 Hurst *et al.* 1936 (various types of equipment and machines for use with fungicidal dusts)  
1601 Kvashnina and Etmisheva 1936 (use of sulphides)  
1984 Moore 1938 (seed treating apparatus)  
1672, 1673 Leukel and Nelson 1939, 1940 (use of chlorine gas)  
339 Brett and Dillon Weston 1941 (loss of vitality of grain during post-treatment storage)  
1515 Koehler 1941 (effect of post-treatment storage on control, only half as much new improved ceresan needed when grain is to be stored; relation of moisture)  
25 American Phytopathological Society Committee 1944 (evaluation of new fungicides by greenhouse testing procedure)  
1015 Hafiz 1948 (control of cereal smuts through cultural practices)

## CULTURE ON ARTIFICIAL MEDIA

- 313 Brefeld 1888  
315 Brefeld 1895  
320 Brefeld 1908

## CYTOLOGY

- 579 Dangeard 1892  
1072 Harper 1898  
2231 Paravicini 1917  
2416 Rawitscher 1922  
1459 Kharbush 1927  
3179 Wang 1934  
2608 Sampson 1939  
454 Christensen and Rodenhiser 1940 (literature survey)

## HETEROTHALLISM AND SEX

- 2230 Paravicini 1916  
2231 Paravicini 1917  
1501 Kniep 1926  
1459 Kharbush 1927  
1502 Kniep 1928

- 153, 154 Bauch 1930 (multipolar sexuality—as exemplified by *Ustilago longissima*)

#### HYBRIDIZATION AND GENETICS

- 1501 Kniep 1926 (incomplete hybridization between *Ustilago* spp.; sporidia of reticulate-spored species do not fuse with those of smooth or echinulate-spored species)  
 158 Bauch 1932 (genetic bases for hybridization and sterility)  
 159 Bauch 1934 (crosses—sporidial fusions—between bipolar and multipolar species)  
 454 Christensen and Rodenhiser 1940 (literature survey)

#### LIFE HISTORY, PARASITISM AND FACTORS AFFECTING

- 803 Fischer v. Waldheim 1869  
 619 DeBary 1884  
 313 Brefeld 1888 (especially of the cereal smuts)  
 2329 Plowright 1889  
 2159 Norton 1896 (Kansas smuts)  
 3047 Tubeuf 1901 (cereal smut spores retain viability after passage through animal intestine)  
 1124 Hecke 1907 (shoot or vegetative infection in smut fungi)  
 1763 McAlpine 1910  
 321 Brefeld 1912  
 1360 Jensen 1918 (review of Brefeld's work on blossom infection)  
 2346 Potapov 1927 (Smuts of Siberia)  
 2608 Sampson 1939 (general review of life cycles)  
 2062 Mundkur 1945 (modes of transmission of Indian cereal smuts)  
 2941 Tapke 1948 (influence of environment on cereal smuts)

#### MISCELLANEOUS

- Historical account of the earlier years 614 DeBary 1853  
 Historical account of the earlier years 3056 Tulasne and Tulasne 1847  
 Structure of spores 802 Fischer v. Waldheim 1867  
 Historical account of the earlier years 803 Fischer v. Waldheim 1869  
 Spore longevity 1678 von Liebenberg 1879  
 Morphological analysis of the genera 311 Brefeld 1883  
 Possible relationship of the yeasts to the sporidial generations of smut fungi 311 Brefeld 1883  
 Affinities to other groups 619 DeBary 1884  
 Infection experiments and methods 313 Brefeld 1888  
 Penetration of infection tubes into unnatural hosts 313 Brefeld 1888  
 Three species of beetles (*Phalacrus politus* Say, *P. penicilliatu* Say, and *Brachytarsus variegatus* Say) which feed on smut in the field 1447 Kellerman and Swingle 1890  
 Phylogeny and taxonomic position 1968 Moeller 1895

- Spore germination 2159 Norton 1896
- Some cereal smut spores germinate after 8½ years in herbarium  
2717 Selby 1898
- Acute dermatitis caused by a smut 2620 Sarra 1898
- Classification and taxonomy 2245 Patoulliard 1900
- All of the more important diseases of forage plants observed were  
caused by various species of smuts 993 Griffiths 1903
- Use of centrifuge (this is first record of) to determine extent of  
spore contamination of grain 493 Cobb 1904
- Toxicity to animals 1725 Liskun 1908
- Historical account 1763 McAlpine 1910
- Phylogeny and relationships 1763 McAlpine 1910
- Grain smut losses in United States 2895 Swingle 1917
- Relation between purity of strain of host and freedom from cereal  
smuts 1227 Hohngaard 1921
- Systematic relations to other fungi 1355 Janchen 1923
- Smut spores in air at high altitudes 2813 Stakman *et al.* 1923
- Conidial stage of *Entyloma* indistinguishable from *Ramularia*  
unless chlamydospores present 1853 Marchal and Sternon 1924
- Seed treated with dusts for smut control avoided by insects and  
mice 1784 Mackie 1925
- Method for isolating single spores or sporidia 632 Dickinson  
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